

U.S. Department of the Interior Bureau of Land Management

**Preliminary Environmental Assessment
DOI-BLM-CO-S010-2011-0062**

Spring Creek Basin HMA 2011 Wild Horse Gather Plan



Wild buckskin stallion, standing just outside of the west boundary fence of the Spring Creek Basin HMA.

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PROJECT NAME: Removal of excess Wild Horses from the Spring Creek Basin Herd Management Area, Colorado.

ECOREGION/PLANNING UNIT: South-Central Highlands/Dolores Public Lands Office.

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List of Acronyms

AML- Appropriate Management Level
BLM – Bureau of Land Management
CDOW – Colorado Division of Wildlife
CFR – Code of Federal Regulations
COR- Contracting Officers Representative
EA – Environmental Assessment
EPA – Environmental Protection Agency
ESI – Ecological Site Inventory
FLPMA – Federal Land Policy and Management Act of 1976
FONSI – Finding of No Significant Impact
FR – Federal Register
HMA – Herd Management Area (Wild Horses)
HMAP- Herd Management Area Plan
IM – Instruction Memorandum
LTH- Long Term Holding
NEPA – National Environment Policy Act
PFC – Proper Function Condition
PI- Project Inspector
PZP22 – Porcine Zona Pellucida 22 month immunocontraceptive vaccine
RMP – Resource Management Plan
SOPs – Standard Operating Procedures
T&E – Threatened and Endangered (species)
TES – Threatened, Endangered, or Sensitive (species)
USFWS- United States Fish and Wildlife Service
WFRHBA- 1971 Wild Free-Roaming Horses and Burros Act
WSA – Wilderness Study Area

1.0 Purpose of and Need for the Proposed Action

1.1 Introduction

The Bureau of Land Management (BLM) is proposing to gather about 60 wild horses and remove approximately 50 excess wild horses from within the Spring Creek Basin Herd Management Area (HMA) beginning in mid September 2011. Consistent with the approved April /1994 Spring Creek Basin Herd Management Area Plan (HMAP), up to 10 of the captured adult horses would be released to maintain herd population within the established Appropriate Management Level (AML).

This Environmental Assessment (EA) is a site-specific analysis of the potential impacts that could result with the implementation of the Proposed Action or alternatives to the Proposed Action. Preparation of an EA assists the BLM authorized officer to determine whether to prepare an Environmental Impact Statement (EIS) if significant impacts could result, or a Finding of No Significant Impact (FONSI) if no significant impacts are expected.

This document is tiered to the 1985 San Juan/ San Miguel RMP/FEIS, and the 1994 approved Herd Management Area Plan.

1.2 Background

1.2.1 Location and Land Status

The Spring Creek Basin HMA comprises about 21,932 acres of public and other land. The HMA is located in San Miguel and Dolores Counties, about 45 miles northeast of Dove Creek, CO and 33 miles southwest of Norwood, CO off San Miguel county rd 19Q (See Figure 1, the Spring Creek Basin HMA Location Map).

1.2.2 HMA History

The Appropriate Management Level (AML) for wild horses within the HMA is 35-65 adults (>1 year old). The AML was established in the 1994 Spring Creek Basin HMAP and reaffirmed in 2005 through the Spring Creek Grazing Allotment/Spring Creek Basin HMA land health assessment and determination (CO-800-2005-027-EA) following an in-depth analysis of habitat suitability and resource monitoring and population inventory data, with public involvement. The AML upper limit is the maximum number of adult wild horses that can graze to maintain a thriving natural ecological balance and multiple use relationship on the public lands in the area. Establishing AML as a population range allows for the periodic removal of excess animals (to the low range) and subsequent population growth (to the high range) between removals.

The current estimated population of wild horses is 90, with a herd sex ratio of 55% stallions/colts and 45% mares/fillies. This number is based on ground survey completed in May 2011 by volunteers with the Four Corners Backcountry Horsemen and includes the 2011 foal crop (10 foals at the time of the count plus 3 mares yet to deliver). Wild horse numbers have increased an average of 23% per year since the HMA was last gathered, thereby reducing the frequency of gathers.

The HMA was last gathered in August, 2007. At that time, 86 wild horses were gathered, 76 removed, and 10 released back to the range. Another gray stallion (named Traveller) was subsequently released back to the range approximately one month after the gather. Of the released horses, five mares were treated with fertility control (Porcine Zona Pellucida, PZP-22) vaccine and freeze marked with the letters "DC" on the left hip. Post-gather, an estimated 40 wild horses with a sex ratio of 55%/45% males/females remained within the HMA. Table 1 gives a summary of wild horse gathers accomplished in the HMA since it's designation in the 1985 RMP.

Table 1 History of Gather in HMA

Year	Wild Horses Gathered	Horses Removed	Horses released	Reason for Gather
1985	155	~123	32	Health of Vegetation & Soil Resources and removal from Naturita Ridge Horse Area.
1991	76	76	0	Health of Vegetation & Soil Resources
1995	72	48	24	Health of Vegetation & Soil Resources
1998	14	4	9 ¹	Outside HMA
2000	49	49	0	Health of Vegetation & Soil Resources
2005	91	51	40	Health of Vegetation & Soil Resources
2007	86	74	11	Health of Resources & Outside HMA
Total	544	427	116¹	Totals

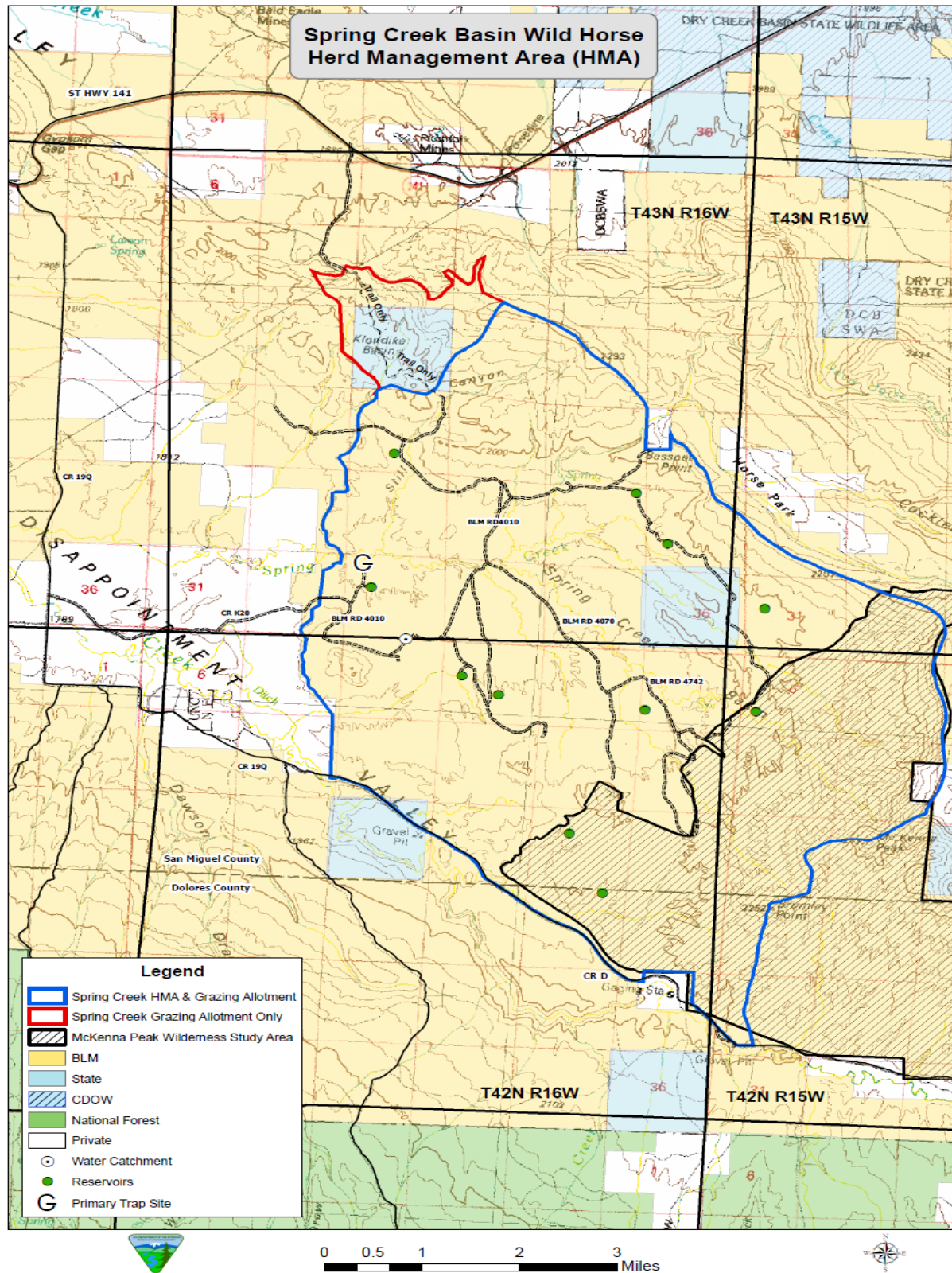
¹One horse euthanized

The five mares treated with PZP-22 and released in August, 2007 would foal normally in the spring of 2008, but according to the PZP research findings, should not have foaled in the spring of 2009. However, two of the mares foaled in 2009, two did not foal, and one was not relocated and is presumed dead. The less than expected results in applying the PZP-22 was likely due to the timing. More recent research indicates that PZP-22 achieves maximum effectiveness when applied in the months of Dec. – Feb¹.

In October, 2008, three mares from the Sand Wash Basin HMA in northwest Colorado were released into the Spring Creek Basin HMA in order to provide more genetic diversity within the herd. All three of introduced mares received PZP 22. These mares were branded on the left hip with the letters “FA”.

¹ Gray, Meeghan E.; David S. Thain, Elissa Z. Cameron, Lowell A. Miller. 2010. [Multi-year fertility reduction in free-roaming feral horses with single-injection immunocontraceptive formulations.](#) *Wildlife Research*, Vol. 37 No. 6 Pages 475 - 481, Published 18 October 2010

Figure 1 Spring Creek Basin HMA Location Map



Based upon all information available at this time, the BLM has determined that 50 excess wild horses exist within the HMA and need to be removed. This assessment is based on the following factors including, but not limited to:

- ☐ A direct count of ≈ 90 wild horses in May, 2011 by volunteers from the Four Corners Backcountry Horsemen showed 55 horses in excess of the AML lower limit.
- ☐ By comparison, livestock use has averaged 97 % of that authorized since the 2005 AML/AUM decision.
- ☐ Wild horses in excess of AML were identified as causal factors contributing to the non-attainment of Colorado Standards for Rangeland Health in the rangeland health assessment completed in 2003. Wild horse overpopulation was identified as contributing to the following standards not being met:

Standard # 1: Upland Soils
Standard # 2: Riparian Systems
Standard # 3: Healthy, Productive Plant and Animal Communities

Monitoring Data pertinent to excess wild horse determination (Appendix F)

- ☐ Frequency transects conducted on selected sites from 1981 to 2010 continued to have a static to downward trend in desirable plant species cover with a corresponding stable to degraded site condition.
- ☐ Upland vegetation resources forage consumption by wild horses is calculated at be moderate to heavy. Forage use by horses within AML ranges from lower AML = 525 AUM's [(35 horses) * (1.25 AU/horse) * (12 months/year) = 525 AUM] to upper AML = 925 AUM's [(65 horses) * (1.25 AU/horse) * (12 months/year) = 925AUM]. Current forage consumption by horses is approximately 1350 AUM's [(90 horses) (1.25 AU/horse) (12 months/year) = 1350] or approximately 40% greater than the upper AML usage that was confirmed in the 2005 decision.
- ☐ Climate- precipitation has been slightly above to slightly below normal for last 4 years.

1.3 Purpose and Need for the Proposed Action

There is a need to protect rangeland resources from further deterioration associated with the current wild horse overpopulation, and restore a thriving natural ecological balance and multiple use relationship in the area consistent with the provisions of Section 3(b) (2) of the *Wild Free-Roaming Horses and Burros Act of 1971* (1971 WFRHBA).

As described above, previous decisions set management objectives for improving rangeland health. Part of these previous decisions included the AML for wild horses. The number of horses today exceeds the desired number of horses, thereby creating a need to remove excess horses to achieve the desired AML. There is also a need for reduced growth rates within the herd in order to extend the period between gathers.

Monitoring data confirms that the ecological sites within the HMA continue to be static or declining and removal of excess wild horses is necessary for BLM to manage the resources in the HMA for a thriving natural ecological balance.

1.4 Land Use Plan Conformance

The San Juan/San Miguel Resource Management Plan, approved in September 1985, (RMP) placed a management emphasis on wild horses, and erosion and salinity management for this area. The RMP provided that the Spring Creek Basin wild horse herd be managed to limit utilization of key forage species, thus improving vegetative conditions, reducing erosion, and maintaining watershed conditions.

The RMP includes land management in the project area; it was approved in September, 1985. The RMP designated the wild horse emphasis area (now the Spring Creek Basin HMA), directed that a Herd Management Area Plan (HMAP) be prepared, and specifically directs management for an AML mid-point of 50 animals, which has been confirmed to be the AML based upon current monitoring data for ecological site conditions in conjunction with the 2003 rangeland health assessment and determination (CO-800-2005-077EA and Appendix F). In addition to wild horses, the RMP also designates management emphasis on watershed values; and wilderness attributes in the portion of the HMA that overlaps the McKenna Peak Wilderness Study Area.

As directed by the RMP, a HMAP was approved in October, 1986 and revised in 1994. The HMAP provides direction on the management of the Spring Creek Basin wild horse herd. The HMAP objectives for upland vegetation, riparian systems, watershed conditions and wild horses all require management of wild horses within the established AML. The BLM has concluded the Proposed Action is in conformance with both plans. The No Action Alternative would not be in conformance with the RMP or the HMAP, since it would result in overpopulation of horses, which would lead to further degradation of upland vegetation, riparian areas, watershed conditions and wild horse habitat.

1.5 Relationship to Laws, Regulations, and Other Plans

This EA is prepared under the authority of the **National Environmental Policy Act (NEPA) of 1969 (PL 91-852) and its regulations (40 CFR 1500-1508), chapter V.**

Statutes and Regulations

The Action Alternatives are in conformance with the *Wild Free-Roaming Horses and Burros Act of 1971* (as amended), applicable regulations at 43 CFR § 4700 and BLM policies. Included are:

The Wild Horse and Burro Act of 1971 (Public Law (PL) 92-195 as amended by PL 94-579 (Federal Land Policy and Management Act (FLPMA) and PL 95-514 (Public Rangelands Improvement Act (PRIA)). Provides for the protection, management, and control of wild horses and burros on public lands administered by the Bureau of Land Management and the U.S. Forest Service.

Section 302(b) of Federal Lands Policy Management Act of 1976 which states that all public lands are to be managed “to prevent unnecessary or undue degradation of the lands.” This act also directs the Bureau of Land Management to manage for multiple uses.

Public Rangeland Improvement Act of 1978 (PL 95-514): Section 2(b)(2), instructs the Bureau of Land Management to “manage, maintain and improve the condition of the public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process established pursuant to section 202 of the Federal Land Policy and Management Act”.

Title 43 Code of Federal Regulations (CFR) parts 4700 and 4100: the Wild Free-Roaming Horse and Burro Act and the implementing regulations (Title 43 Code of Federal Regulations (CFR) 4700)-Protection, Management, and Control of Wild and Free-Roaming Horses and Burros, direct that wild horses be managed in balance with other uses and the productivity of their habitat. The Bureau is also directed to remove the excess animals so as to restore a thriving natural ecological balance to the range and protect the range from the deterioration associated with overpopulation.

43 CFR § 4710.3-1 Herd Management Areas- “Herd Management Areas shall be established for maintenance of wild horse and burro herds.”

43 CFR § 4710.4 Constraints on Management. Management of wild horses and burros shall be undertaken with limiting the animals' distribution to herd areas. Management shall be at the minimum feasible level necessary to attain the objectives identified in approved land use plans and herd management area plans.

43 CFR § 4720.1 Removal of excess animals from public lands. Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately.

43 CFR § 4740.1 Use of motor vehicles or aircraft.

(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner.

(b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made.

43 CFR § 4750 - "Private Maintenance." The authorized officer shall make available for private maintenance all healthy excess wild horses or burros for which an adoption demand by qualified individuals exists.

43 CFR § 4180.2(b) Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration- "Standards and guidelines must provide for conformance with the fundamentals of 4180.1."

Other Plans and Decisions

Spring Creek Basin Wild Horse Herd Management Area Plan (HMAP): The revised herd management plan was approved on April 11, 1994 and states that the overall objective of the Spring Creek Basin HMA is to maintain a healthy, viable population of wild horses in a thriving natural ecological balance with other resources and users. The 1994 HMAP set the appropriate management level (AML) for the Spring Creek Basin HMA at 35 to 65 horses, plus or minus 10%. The HMAP specifies that a gather will be scheduled when numbers exceed 65 animals, with 35 being maintained in the HMA. The Dolores Public Lands Office does not rely solely on this direction, and conducts resource monitoring studies before proposing the removal of excess horses.

Subsequent analyses tied to the HMAP that are pertinent to the proposed action include:

Environmental assessment CO-SJFO-01-053-EA analyzed the periodic introduction of wild horses with similar breeding from other herd areas, into the Spring Creek Basin HMA in order to maintain the genetic viability of the Spring Creek Herd. The Decision Record adopting the Proposed Action for the periodic introduction was signed on July 31, 2001, and was not appealed.

Environmental assessment CO-800-2005-027EA analyzed the appropriateness of livestock grazing permit renewal and the AML for wild horses in the Spring Creek Grazing Allotment/Spring Creek Basin HMA. Analysis also clarified that juvenile (<1 year old) horses would not count towards the AML. The analysis contains extensive affected environment and background information.

BLM's May 27, 2005 Final Decision reaffirming this AML, based on this analysis, was appealed to the Interior Board of Land Appeals (IBLA). On May 28, 2007 the IBLA issued Order IBLA 2005-212, affirming BLM's decision on the AML. This Order stated:

"The goal of wild horse management is to maintain a thriving natural ecological balance among wild horse populations, wildlife, livestock, and vegetation, and to protect the range from the deterioration associated with overpopulation. 16 U.S.C. § 1333(a) (2000); 43CFR § 4700.0-6; *Thomas M. Berry*, 162 IBLA 221, 224 (2004); *Don and Martha P. Sims*, 141 IBLA 1, 8 (1997). The test to determine whether wild horse population levels are appropriate is whether such levels will achieve and maintain a thriving ecological balance on the public lands, *Don and Martha P. Sims*, 141 IBLA at 8. We have defined the AML as the "optimum number of wild horses and burros that 'results in a thriving natural ecological balance and avoids deterioration of the range'."

1.6 Conformance with Rangeland Health Standards and Guidelines

In 1996, in accordance with 43 CFR Subpart 4180, the Colorado BLM developed five Standards for Public Land Health. The standards were analyzed in a statewide environmental assessment that included extensive public involvement. The Record of Decision adopting these standards was signed by BLM's Acting Colorado State Director in November 1996, the Secretary of the Interior approved them in February 1997. These five standards include 1) upland soils; 2) riparian systems; 3) healthy, productive plant and animal communities; 4) special status, threatened and endangered species; and 5) water quality. The Environmental Assessment for the 2007 wild horse gather (EA # CO-800-2007-0077) documented conformance with the Colorado Rangeland Health Standards and Guidelines as determined from a rangeland health assessment conducted in 2003. Table 2 summarizes the determinations as to whether standards are being achieved in the Spring Creek Allotment/HMA along with apparent causal factors. Copies of the rangeland health determinations are available for review at the Dolores Public Lands Office, BLM.

In the Environmental Consequences Chapter of this EA, statements are made as to whether or not an alternative would progress towards meeting land health standards in the future or digress away from meeting those standards.

Table 2 Summary of 2003 determinations and their causal factor(s) for Colorado Rangeland Health Standards

Standards	Determinations	Causal Factors
Standard # 1: Upland Soils	Not Achieved	¹ Domestic livestock and wild horse grazing. ² Big game populations and historic grazing by livestock.
Standard # 2: Riparian Systems	Not Achieved	¹ Domestic livestock and wild horse grazing around reservoir in Wildcat Canyon. ² Historic private land grazing practices upstream outside of Allotment/HMA
Standard # 3: Healthy, Productive Plant and Animal Communities	Not Achieved	¹ Domestic livestock and wild horse grazing. ² Big game populations and historic grazing by livestock.

Standard # 4: Special Status, Threatened and Endangered Species	Achieved	Determination not required as a result of standard being achieved
Standard # 5: Water Quality	Achieved	Determination not required as a result of standard being achieved

¹Causal factors within control of the BLM. ²Causal factors outside control of the BLM.

1.7 Decision to be Made

The authorized officer would determine whether or not to implement the proposed population control measures in order to achieve and maintain a thriving, natural ecological balance and multiple use relationships on public lands within the Spring Creek Basin Wild Horse HMA.

Specifically the decision to be made is whether or not to,

1. Gather and remove excess horses and if so when, where and how the gather and removal would take place,
2. Initiate PZP use for fertility control and if so how often and with what method,
3. Remove wild horses found outside the HMA and if so in what manner.

The authorized officer's decision would not set or adjust the AML and would not adjust livestock use, which were set by previous decisions. There has been no evidence presented or data collected during this analysis that indicates the existing AML needs to be adjusted, nor is adjusting the AML within the scope of this analysis.

1.8 Scoping and Identification of Issues

A letter was sent to interested individuals, organizations, government agencies, tribes, and elected officials on April 8, 2011 initiating an informal scoping for the EA, noticing a public hearing on the use of motor vehicles and helicopters and announcing an informal scoping meeting to be held at the Dolores Public Lands Office on April 25, 2011. Scoping comments were received at this meeting along with email and letter submissions until May 12, 2011. 27 responses were received and are available in the project file.

Based on the comments received, internal scoping, and experience with previous gathers, the following issues have been identified and addressed in this EA in relation to the management of wild horses.

- (1) Impacts to vegetation, soils, cultural, and riparian areas. Measurement indicators include:
 - Forage utilization
 - Trend of key plant species toward ecological site condition objectives.
 - Species composition.
- (2) Impacts to wildlife, migratory birds, threatened and endangered species, special status species and their habitat. Measurement indicators include:
 - Potential for temporary displacement, trampling or disturbance
 - Potential competition for forage and water over time
- (3) The potential impacts to wild horse herd from management actions to influence herd population

or the lack of action. Measurement indicators include:

- Potential impacts to herd social structure.
 - Potential impacts to individual horses;
 - Expected effectiveness of proposed fertility control
 - Potential effects to genetic diversity
 - Handling of horses during the gather, at the corrals, after release and through adoption process.
- (4) A need to implement different or additional population control methods in order to maintain population size within AML over the long-term. Measurement indicators include:
- Projected average annual growth rate/expected effectiveness of proposed population control methods (WinEquus population modeling- Appendix E);
 - Projected gather frequency;
 - Projected number of excess animals to be removed and placed in the adoption, sale, and short or long term holding pipelines over the next 10 years.

2.0 Proposed Action and Alternatives

2.1 Introduction

This section of the EA describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- Alternative 1 - Proposed Action: Helicopter drive trap and capture up to 60 wild horses in order to remove 50 excess animals. Apply the contraceptive porcine zona pellucida (PZP) with annual boosters over the next five years, and establish a 60% male sex ratio.
- Alternative 2: Removal with application of PZP-22 to released mares.
- Alternative 3 - No Action: – Defer gather and removal.

The Proposed Action and Alternative 2 were developed to respond to the identified resource issues and the Purpose and Need and are consistent with the management objectives established in the April, 1994 HMAP. The No Action Alternative would not achieve the identified Purpose and Need and is not consistent with the approved HMAP. However, it is analyzed in this EA to provide a basis for comparison with the other action alternatives, and to assess the effects of not conducting a gather at this time. The No Action Alternative is in violation of the requirement under the Wild Free-Roaming Horses and Burros Act that requires the BLM to immediately remove excess wild horses when established AML is exceeded.

2.2 Management Actions Common to Alternatives 1 and 2

Under either Alternatives 1 or 2 the following actions would occur.

- The gather will begin in mid September, 2011 and take up to four days to complete. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the schedule.
- Gather operations will be conducted in accordance with the Standard Operating Procedures (SOPs) described in the National Wild Horse and Burro Gather Contract (Appendix A). The primary gather (capture) methods will be the helicopter drive trap method with occasional horseback assisted roping.
- Trap sites and holding facilities will be located in previously used trap sites and other disturbed areas (Figure 1) whenever possible. Undisturbed areas identified as potential trap sites or holding facilities would be inventoried for cultural resources. If cultural resources are encountered, these locations would not be utilized unless they could be modified to avoid impacts to cultural resources.
- Gather operations in the Mckenna Peak Wilderness Study Area (WSA) will be conducted by herding the animals by helicopter or on horseback to temporary corrals located outside WSA boundary. No landing of aircraft would occur in the WSA except for emergency purposes and no motorized vehicles would be used in the WSA in association with the gather operation unless such use is consistent with the minimum requirements for management of WSA's and is preapproved by the authorized officer.
- Animals will be removed in conformance with the current selective removal strategy identified in IM 2010-135. In summary, this policy identifies the following priorities for removals:
 - 1) Four years and younger.
 - 2) 11 – 19 years old.
 - 3) 5-10 years old.

- 4) 20 years and older.

It is not anticipated that any horses 20 years or older will have to be removed.

- An Animal and Plant Inspection Service (APHIS) or other veterinarian will be on-site during the gather, as needed, to examine animals and make recommendations to BLM for care and treatment of wild horses.
- Decisions to humanely euthanize animals in field situations will be made in conformance with BLM Policy ([WO IM #2009-041](#)). BLM staff will be present on the gather at all times to observe animal condition and ensure humane treatment. Additionally, animals transported to BLM holding facilities are inspected by facility staff and on-site contract Veterinarians to observe health and ensure the animals have been cared for humanely.
- Public access to the HMA will be restricted during critical gather operations to ensure public and horse safety and minimize disruption to the gather process. In accordance with BLM policy (IM 2010-164), public viewing times and locations would be provided. Restrictions require a Notice of Closure published in the Federal Register (FR) under the authority of Section 303(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1733(a)), and regulations 43 CFR 8360.0-7, and 43 CFR 8364.1.
- The primary objective of the gather is to reduce the population to 35 adult horses. If there is sufficient time and conditions on the ground are favorable, additional horses will be gathered and released for the purpose of applying population control measures.
- Approximately 30 animals will be held for an adoption event planned about Sept. 24, 2011, in either Cortez or Durango, CO. These animals will be prepared at the holding corrals in the Spring Creek Basin and prepared (aged, freeze-marked, vaccinated, de-wormed, and tested for equine infectious anemia [EIA]) for adoption. Those excess animals not selected for adoption will be transported to the Canon City BLM corral facility where they would be prepared for adoption, sale (with limitations) or long-term holding. Any horses not adopted in Cortez or Durango will be transported to the Canon City corral facility.
- Noxious weed monitoring at trap sites and temporary holding facilities will be conducted in the spring and summer of 2012 by BLM. Treatment would be provided, if necessary, following guidance from the San Juan Public Lands Invasive Species Action Plan, Volume I: Integrated Weed Management Plan and Programmatic Environmental Assessment CO-800-2008-075 EA, Decision March 27, 2011. Only noxious-weed-free hay would be utilized on public lands during the proposed gather operation.
- A comprehensive post-gather population survey will occur within 12 months following completion of the gather operation.

2.3 Description of Alternatives Considered in Detail

2.3.1 Alternative 1. Proposed Action: Removal of excess horses and application of PZP to mares annually over the next five years.

The Proposed Action would gather about 60 and remove approximately 50 excess wild horses from within and outside (if necessary) the Spring Creek Basin Herd Management Area (HMA) beginning in mid September, 2011. Post gather population would approximate the lower AML of 35 horses.

Animals captured within the HMA would be removed using a selective removal strategy. Any horses gathered from outside the HMA would be removed and not relocated in the HMA. Selective removal

criteria for the HMA include: (1) First Priority: Age Class - Four Years and Younger; (2) Second Priority: Age Class - Eleven to Nineteen Years Old; (3) Third Priority: Age Class Five to ten years old. Up to 10 of the captured wild horses would be released; of these, about 4 would be mares and about 6 would be studs. Released mares would be given a primary dose of Porcine Zona Pellucida (PZP) immunocontraceptive vaccine to control fertility. This would be followed up in the field with a remotely administered booster dose prior to the end of March, 2012. Additional select mares would be darted in the field by BLM and volunteers with both a primary and booster dose of liquid PZP the following January, February or March using Standard Operating Procedures for fertility control (Appendix B).

It is likely that the horses will be much more wary of human presence after a gather and that they will still be adjusting to new social structures. The difficulty of approaching these mares for a booster shot will likely be increased within 2 months post-gather. Therefore, the PZP will be administered by remote delivery via dart gun in January through March of 2012. Specific details concerning which mares will be targeted for PZP, how many, and who will be administering the contraceptive will be worked out prior to the January-March darting season in cooperation with local volunteer groups. The BLM's Grand Junction Field Office (GJFO), having more than 5 years of experience in administering the liquid PZP in the field successfully, will be instrumental in providing advice and expertise on all aspects of PZP administration.

Effectiveness of PZP for fertility control would be evaluated in yearly census to determine which mares have foaled and the effect upon herd genetics and population growth rates. At the end of 5 years PZP use would be evaluated as part of a determination for need of additional population control measures.

It is impossible to determine the sex ratio of captured horses until the gather takes place. While the ideal, intended sex ratio for returned horses is 60/40, the actual sex ratio for the herd depends not only on the captured horses that are released but also on the horses that remain uncaptured within the HMA. A complete removal of all horses within the HMA has not occurred since the first gather took place in 1985. Historically, about 25 horses are not captured at each gather. With the demographic information gathered by volunteers over the last several years, BLM should be able to determine the sex of horses that are not gathered. This knowledge, combined with the horses that are captured and anticipated for release, would allow achievement of the desired 60/40 sex ratio.

Proposed gather action would also include:

- Studs would be selected for release with the objective of establishing a 60% male sex ratio. Studs would be selected to maintain a diverse age structure, herd characteristics and body type (conformation).
- The primary gather (capture) methods would be the helicopter drive trap method with some limited horseback assisted roping, if needed, to restrain individual horses. Trap sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible. If gather requirements require a new trap site to be utilized, it would be selected to avoid sensitive resources (Appendix A).
- The principal portable trap site and temporary holding corral for gathering horses that are located within the HMA would likely be located in T.43N., R.16W. Section 33: NW¼ NMPM. This primary trap location is illustrated on the HMA map (Figure 1).
- It is possible, but less likely that portable trap sites would be located within the following public land locations:

- T.42N., R.15W., Section 29: SW $\frac{1}{4}$; Section 30: SE $\frac{1}{4}$ NMPM.
 - T.42N., R.16W., Section 4: N $\frac{1}{2}$ N $\frac{1}{2}$; Section 5: N $\frac{1}{2}$ NE $\frac{1}{4}$; Section 25: S $\frac{1}{2}$ NMPM.
 - T.43N., R.16W., Section 28: S $\frac{1}{2}$ SW $\frac{1}{4}$; Section 32: E $\frac{1}{2}$; Section 33: NW $\frac{1}{4}$; Section 34: NE $\frac{1}{4}$ NW $\frac{1}{4}$ NMPM.
- Trap locations would be based on: 1.) where BLM employees and the gather contractor find horses when the project begins; 2.) past experience and knowledge gained from previous gather operations in this area; and 3.) changing resource conditions; like water and forage availability. For the reasons indicated above, proposed trap locations must be somewhat tentative. Exact locations would be chosen during the roundup. The Proposed Action includes evaluating specific trap locations for impacts to T&E species, cultural resources and wilderness values, and not using any trap sites that would impact these critical resources.
 - Though unlikely, it is possible that temporary traps constructed of portable steel panels might be erected in the McKenna Peak Wilderness Study Area (WSA), at T.42N., R.15W., Section 29: SW $\frac{1}{4}$; or Section 30: SE $\frac{1}{4}$. These locations have been used in the past. If these trap locations are used, no motor vehicles would enter the WSA. The WSA boundary in this area is located north of a four-wire fence that parallels the north side of the Disappointment Valley county road. Trap panels and jute netting for trap wings would be hand carried and erected just inside the aforementioned fence.
 - All regulated medical waste (i.e. syringes, darts and needles) generated by preparing the captured horses for adoption would be placed in approved containers as specified in Colorado Administrative Code and disposed of in accordance with the code. If any horses die during capture operations, or need to be euthanized the carcass would be buried at least three feet deep in an upland area.

2.3.2 Alternative 2: Removal with application of 22-month PZP to released mares.

Alternative 2 would be similar to alternative one except that the 22-month PZP would be administered at the holding corrals to any mares returned to the HMA. This would be the only contraceptive administered in the HMA.

2.3.3 Alternative 3. No Action Alternative

Under the No Action Alternative, no gather would occur and no additional management actions would be undertaken to control the size of the wild horse population at this time.

2.4 Summary Comparison of Alternatives

Impacts from gather activities as compared to No Action would be similar between alternatives 1 and 2 (Table 3).

Objectives of reducing the number of wild horses placed in adoption/sale or long-term pastures would be met by Alternative 1 to a greater degree than Alternative 2.

Table 3 Summary Comparison of Impacts between Alternatives

Item/Resource	Proposed Action Removal of excess horses and application of PZP to mares annually over the next five years.	Removal with application of PZP-22 to released mares	No Action
Impacts to Wild Horses			
• Gather Number	≈60	≈60	0
• Removal Number	≈50	≈50	0
• Fertility Control - # Mares	≈5	≈5	0
• Post-Gather Sex Ratio	≈60/40	≈60/40	55/45
• Post-Gather Population Size	≈35 adults	≈35 adults	≈95
• Projected mean annual growth rate	14.2%	18.3%	18.9%
• Projected gather frequency	5-6 years	3-4 years	emergency removal action as necessary
• Disturbances to horse social affiliations, health	Mitigated by SOP's	Mitigated by SOP's	none
Impacts to Vegetation	Opportunity for the vegetative communities to progress toward achieving a thriving natural ecological balance. Removal of wild horses would result in decreased harvest of vegetation. Maintenance of herd levels combined with dormant season use by livestock should move plant community toward a more desirable mix of species.	Same as proposed action, but any beneficial impacts would be over a shorter term	Increased competition for forage among multiple-uses as wild horse populations continue to increase. Forage utilization would continue to exceed the capacity of the range resulting in a loss of desired forage species from plant communities as plant health and watershed conditions deteriorate.

Item/Resource	Proposed Action Removal of excess horses and application of PZP to mares annually over the next five years.	Removal with application of PZP-22 to released mares	No Action
Impacts to Soils and Riparian/Wetland Resources	Slight soil compaction and impact would occur from concentration of horses and vehicles at the trap sites. Compaction would be reduced and surface cover would be increased if AML is achieved. Riparian areas around major water sources would continue to be impacted by congregation of horses around the limited sources of water but would be incrementally reduced with fewer numbers of animals.	Same as proposed action	Upland/Riparian use would continue to increase by wild horses by causing disturbance to the soil surface (hoof action) and decreasing soil surface cover (standing plant and litter amounts).
Impacts to Wildlife/ Migratory birds <ul style="list-style-type: none"> • Potential for temporary displacement, trampling or disturbance • Potential competition for forage and water over time 	Reducing the overall grazing pressure through horse removal to the lower limit of AML would provide both immediate and longer-term indirect improvement in habitat conditions throughout the year.	Reducing the overall grazing pressure through horse removal to the lower limit of AML would provide both immediate and longer-term indirect improvement in habitat conditions throughout the year. Disturbance displacement in the short term would be reduced, as PZP-22 would be administered during the gather rather than with a 4-5 month delay. Long term more frequent gathers would increase displacement of populations during periods of gathers.	Wildlife populations in the HMA would be forced to compete more for limited water and forage, which would most likely alter wildlife use patterns and degrade habitat.
Impacts to Livestock Grazing Management	The Proposed Action would allow present livestock use at allocated levels to continue. Wild horse utilization would decrease, areas that had year round horse pressure would be largely reduced, and allow vegetation use to be rotated without wild horses being more likely to graze in the area before and after the off-date of livestock.	The same as the Proposed Action would occur, but to a lesser extent due to less anticipated success of fertility control resulting in wild horse population exceeding carrying capacity in a shorter period of time.	Without removal of horses to the AML, vegetation utilization rates would exceed the capacity of the area, further degrading the forage resource and deteriorating the habitat.
Impacts to Cultural, Paleontological, and Historic Resources	There are no known impediments affecting access or use of the proposed project areas for religious or traditional uses by the Tribes. Potential trap sites would be assessed for presence and located resources avoided.	There are no known impediments affecting access or use of the proposed project areas for religious or traditional uses by the Tribes. Potential trap sites would be assessed for presence and located resources avoided.	No trap sites would be constructed and potential cultural or paleontological resources would not be disturbed.
Impacts to Recreation/Wilderness Resources	Temporary closure of HMA to recreational use during gather, reduced opportunities for viewing wild horses. Potential for temporary gathering facilities within Mckenna Peak Wilderness Study Area.	Same as proposed action	Increase in viewing opportunities for wild horses as population continues to increase.

2.5 Alternatives Considered But Dismissed from Detailed Analysis

2.5.1 Use of Bait and/or Water Trapping

Alternatives for capturing the horses such as bait and water trapping were considered in previous gather analyses, but eliminated from further consideration because they were impractical, and/or created cost and safety considerations for the horses and people working on the gather. All water sources on the HMA would have to be fenced from the horses so that they would have to come in to the sources where the fence traps were set up. Water typically rises up to the surface in the bottom of Spring Creek in shallow pools, disappears for some distance and then rises to the surface again. Fencing the length of Spring Creek where this occurs would be impractical. Many of the water sources and bait trapping locations in the HMA do not have vehicle access, so trapped horses would have to be led to holding corrals on the roads.

Bait trapping was not considered practical for this gather due to the number of animals needing to be removed as it would require additional trap locations, would not be conducive to identifying horses for removal, and would require an extended period of time to remove 50 horses. This alternative may be practical for maintenance of AML numbers in the future if monitoring of horse populations demonstrates that fertility control using PZP is effective and incremental removal of small numbers of wild horses would achieve the purpose and need for action. Issues needing to be addressed for use of bait trapping in the future may include: affects on wildlife caught in traps, need for vehicle access to remove excess horses, timing to avoid critical wildlife closures, weather conditions, cost, transportation, type of bait to be used and horse breeding periods.

2.5.2 Helicopter Drive-Trapping with no Fertility Control

This alternative was considered for reducing the AML to 35 adults but was dismissed because it would result in more frequent gathers. Historically, the gather interval was a minimum of every four years. While this alternative would maintain the status quo while meeting resource objectives, there would be no potential to lengthen the interval between gathers as is possible with administration of PZP and alteration of the sex ratio to favor males.

2.5.3 Release of gelded horses back into the HMA as a means of reducing population growth.

This alternative was considered as a means of reducing the growth rate by releasing geldings back to their home range following castration. Gelded horses would count against the AML as a means of reducing future population growth. Alternative was dismissed because it would not be in conformance with BLM H-4700-1 Wild Horses and Burros Management Handbook section 4.5.4.2 where it should be considered only in HMA's with large AMLs. Gelded horses would not address wild horse objectives to increase genetic diversity within the Spring Creek Basin HMA. Current BLM policy (BLM Instruction Memorandum 2010-135) is that identification of HMAs to be managed for non-reproducing wild horses and setting the criteria for their selection be accomplished in Land Use Plans. Completion of additional site-specific environmental analysis, issuance of a decision, and providing opportunity for administrative review under 43 CFR Part 4.21 may also be necessary for implementation of non-reproducing wild horses.

3.0 Affected Environment

This section of the EA briefly discusses the relevant components of the human environment which would be either affected or potentially affected by the Action Alternatives or No Action (refer to Table 4).

Direct impacts are those that result from the management actions while indirect impacts are those that exist once the management action has occurred.

3.1 General Description of the Affected Environment

HMA is located in the Disappointment Valley area of southwestern Colorado. Topography varies from open, rolling hills to rugged mountainous country to the north, south, and east boundaries. Elevation ranges from 6,200 to 7,400 feet. Precipitation averages from 12-16 inches per year. Temperatures vary from

Vegetation varies from salt desert shrub community in the valley and pinon-juniper woodland on the slopes and higher elevations. Green rabbitbrush, shadscale, black sage, galleta grass, Indian ricegrass, winterfat, and needle-and-thread grass make up the primary forage items in the horses' diet.

At various times of the year, the HMA provides habitat for elk, mule deer, bald eagles, golden eagles, peregrine falcons, coyotes, prairie dogs, and the occasional black bear and mountain lion. Rattlesnakes are common throughout the HMA.

3.2 Description of Affected Resources/Issues

The beginning of this section shows tables with 1) elements of the human environment subject to statute, regulations or executive order and 2) other resource elements of concern. Following the tables are paragraphs describing the affected environment for each resource element

Table 4 lists the elements of the human environment subject to requirements in statute, regulation or executive order. Where effects may occur, the affected environment is described following these tables.

Table 4 Supplemental Authorities

Supplemental Authorities	Present	Rationale
Air Quality	Yes	The planning area is outside a non-attainment area. Implementation of the action alternatives would result in small and temporary areas of disturbance.
Areas of Critical Environmental Concern	No	Not Present
Cultural Resources	Yes	To prevent any impacts to cultural resources, trap sites and temporary holding facilities would be located in previously disturbed areas. Cultural resource inventory and clearance would be required prior to using trap sites or holding facilities outside existing areas of disturbance.
Environmental Justice (E.O. 12898)	No	N/A
Fish Habitat	No	None present
Floodplains	No	None present

Supplemental Authorities	Present	Rationale
Rangeland Management	Yes	Competition with wild horse use for resources. Discussed below
Migratory Birds	Yes	Discussed Below
Native American Religious Concerns	Yes	No Native American Religious concerns were identified. There is no other evidence that suggests the activity would affect any area that holds special meaning for Native Americans.
Invasive/Non native species	Yes	Short-term potential for increased weed populations are offset by monitoring and treatment. Discussed Below
Prime and Unique Farmlands	No	Not Present
Wetlands and Riparian Zones	Yes	Discussed below
Threatened and Endangered Species	No	Not affected
Wastes, hazardous and solid	Yes	Disposal of immunocontraceptives and equipment are mitigated through standard disposal practices under Colorado regulations. Solid wastes would be generated during the gathering activities at the camping area (trash and human wastes.). Potential for impacts from solid waste or equipment spills are mitigated through disposal practices.
Water quality,	Yes	Discussed Below
Wild and Scenic Rivers	No	Not Present
Wilderness/Wilderness Study Areas	Yes	Part of HMA extends into McKenna Peak WSA. Discussed below

Other resource of concern in the human environment identified as present and potentially affected by the Action Alternatives (Alternative 1-2) and/or the No Action Alternative are listed in Table 5. The existing situation (affected environment) relative to these resources is described below.

Table 5 lists other resources considered in this analysis.

Table 5 Other Resources considered

Resource Topic	Present	Rationale
Wild Horses	Yes	Affect of actions on horses and population viability. Discussed below.
Special Status Species	Yes	Affect upon state and BLM sensitive species other than T&E. Discussed below.
Wildlife	Yes	Affect upon wildlife terrestrial and aquatic species and their habitat. Discussed below.
Vegetation/Ecological Sites	Yes	Affect on vegetation trend and site degradation. Discussed below.
Recreation	Yes	Affect upon opportunities for viewing wild horses. Discussed below.
Soils	Yes	Affect on soil structure and function. Discussed below.

3.3 Resources Affected that are under supplemental authorities

3.3.1 Cultural Resources

An archaeological inventory was performed by BLM archaeologists on August 1, 2005. No sites were encountered at the proposed West HMA Trap/Corral Location, or along the road to access this location. The remnants of one historic homestead, 5SM5098, were located at the Custer Dam Area Trap Site. 5SM5098 was determined to be not eligible to the National Register of Historic Places (NRHP) and therefore does not require further protection.

3.3.2 Livestock/Rangeland Management

Detailed information about the authorized livestock use within the HMA is provided in EA number CO-800-2005-027. The Spring Creek Grazing Allotment #17056 is the only grazing allotment that encompasses the Herd Management Area (HMA). This grazing allotment is slightly larger than the HMA, as it includes a section of State land, and a lesser amount of public land, in the Klondike Basin area that is not within the HMA. The present BLM grazing permittee has been permitted in the Spring Creek Allotment since 1972 and leases the aforementioned section from the Colorado State Land Board, as well as an additional State section that is located within the HMA. Based on the aforementioned land health assessment and environmental assessment # CO-800-2005-027 EA, on May 27, 2005, the BLM issued a grazing decision² reducing the permitted livestock use level from:

<u>Livestock</u>		<u>Grazing Period</u>		Percent Public	BLM
<u>Numbers</u>	<u>Kind</u>	<u>Begin</u>	<u>End</u>	<u>Land</u>	<u>AUMs</u>
180	cattle	12/01	02/28	94%	501*;

to the currently permitted level of livestock use:

<u>Livestock</u>		<u>Grazing Period</u>		Percent Public	BLM
<u>Numbers</u>	<u>Kind</u>	<u>Begin</u>	<u>End</u>	<u>Land</u>	<u>AUMs</u>
125	cattle	12/01	02/28	88%	326*.

* AUM refers to animal unit month, defined as the amount of forage required to sustain one cow, or its equivalent for one month.

This same decision cancelled 1,679 previously permitted public land livestock AUMs, most of which had been held in suspension since 1987. The current grazing permittee was originally permitted for 2,005 public land livestock AUMs in this allotment. A second grazing permit for another 400 public land livestock AUMs in the HMA was acquired by the National Mustang Association in 1999, and relinquished by NMA 2002. As a result, a total of 2,079 BLM livestock grazing AUMs have been cancelled or retired from within the HMA in the last 20 years, with 326 remaining active. This 86% reduction in BLM livestock AUMs has increased plant production and availability for use by the horses, wildlife species and soil protection.

3.3.3 Migratory Birds

The following Birds of Conservation Concern (2002) may occur or are known to occur in the area: golden eagle, northern harrier, western burrowing owl, gray vireo, sage sparrow, pinyon jay, Virginia's warbler. Migratory birds noted during the Land Health Assessment field work include: green-tailed towhee, MacGillivray's warbler, chipping sparrow, Say's phoebe, lark sparrow, black-throated gray

² FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD for ENVIRONMENTAL ASSESSMENT #CO-800-2005-027EA: GRAZING PERMIT RENEWAL in the SPRING CREEK GRAZING ALLOTMENT

warbler, ash-throated flycatcher, broad-tailed hummingbird, blue gray gnatcatcher, vesper sparrow, and mourning dove.

3.3.4 Invasive/Non-Native Species

There are several relatively small and widely scattered patches of Russian knapweed located along roadsides in this allotment. These patches do not appear to be spreading aggressively, though they would likely persist and increase in size if not controlled with herbicides. Russian knapweed has no known native predators and thus has a competitive advantage over palatable native species. Invasive plant species lower the productivity and diversity in the native plant community and can lead to monotypic stands with little or no value to wildlife, wild horses or livestock. In addition, Russian knapweed is allelopathic, that is it releases a chemical into the soil that limits the germination and growth of other plant species. In March 2007, a project cut tamarisk and sprayed the cut stumps with herbicide, along the most heavily infested reach of Wildcat Canyon.

3.3.5 Water Quality (Surface and Ground)

Spring Creek Basin drains into Disappointment Creek, the latter of which flows to the northwest and enters the Dolores River, approximately 8 miles upstream of the old townsite of Slick Rock, CO. The soils in the basin are largely derived from Mancos shale and exhibit fine surface textures, high in silts and clay, causing low infiltration capacities and high runoff rates. Multiple infiltrometer tests taken during the field season of 2003 yielded infiltration rates that were essentially zero. Watershed cover (vegetation) is commonly below potential which adds to the naturally high runoff and increases the rate of erosion within the watershed. The basin is drained by ephemeral and intermittent channels. Spring Creek, the major drainage within the basin, is mostly ephemeral except for short reaches of the main stem that flow perennially. Runoff occurs from snowmelt in the spring and from high intensity, short-duration thunderstorms during summer monsoons. Spring Creek and its tributaries are incised into the Mancos shale, with active headcuts in the headwaters and lateral erosion along its main stem. Consequently, during runoff events, erosion from both upland soil surfaces and channel incision and adjustment, produce high concentrations of suspended sediment. Salinity is also high in surface waters, being contributed from both erosional processes and saline groundwater discharge. In such highly saline soils, large sediment inputs result in elevated salt concentrations that are reflected in high conductivity and total dissolved solid (TDS) measurements. The salinity standard as written by the State is not specific to stream reaches in Colorado (See CDPHE, WQCC Regulation No. 39 Colorado River Salinity Standards). Therefore, while TDS, a measure of salinity, is high in the Spring Creek Basin and Disappointment Creek, it is not known to be in violation of Colorado State standards. All other water quality parameters in the basin are meeting State standards.

Livestock and wild horse use generates nonpoint source pollution. The level of nonpoint source pollution varies considerably with site specific conditions and is highly dependent on the frequency, magnitude and timing of runoff events, watershed condition, number and proximity of livestock and/or horses to surface water systems, duration of grazing and season of use.

One of the five land health standards is #5 *Water quality* of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado, Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and antidegradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303© of the Clean Water Act.

As presented in Table 2 (section 1.6), Water Quality Standard #5 is currently being achieved for the Spring Creek Allotment/HMA and will not be discussed further.

3.3.6 Wetlands and Riparian Zones

Spring Creek is the major drainage for the analysis area. Wildcat Canyon is an intermittent tributary to Spring Creek near the west end of the herd area. Spring Creek is mostly ephemeral except for short reaches of the main stem that flow perennially. Ephemeral reaches of Spring Creek do not support riparian vegetation. Those sections with year-round water may support species such as rubber rabbitbrush, greasewood and tamarisk. Tributaries to Spring Creek, with the exception of Wildcat Canyon, are dominated by sagebrush and/or greasewood and are extensive, active and continuous gully systems. Knickpoints and headcuts progressively increase in these tributaries upstream from the main channel. Wildcat Canyon is an intermittent stream that supports riparian vegetation such as cottonwoods, willow, serviceberry and tamarisk. In March 2007, the BLM, in partnership with the National Mustang Association, the San Juan Mountains Association and students from the University of Missouri Alternative Spring Break Program, cut tamarisk and sprayed the cut stumps with herbicide, along the most heavily infested reach of Wildcat Canyon.

Wildcat Canyon was assessed in 2003 using Proper Functioning Condition protocol. This is a qualitative survey used to assess stream hydrology, vegetation and erosional/depositional processes. Streams are rated Proper Functioning Condition (PFC), Functional-At Risk (FAR) or Nonfunctional (NF). Functional-At Risk ratings include an assessment of trend (BLM TR 1737-9 1993). Spring Creek was not assessed due to its lack of riparian vegetation. Wildcat Canyon rated FAR, trend not apparent, above BLM road 410 and PFC below BLM road 410. The FAR rating was due to upstream land activities outside of the herd management area and due to compacted conditions around Wildcat Reservoir.

In addition to streams, there are a few springs scattered throughout the herd area. Most of the springs have little riparian vegetation associated with them. An exception is Bassnet Point Spring. Bassnet Point Spring was assessed using PFC protocol for lentic riparian systems (TR 1737-11 1994) on September 3, 2003, and rated in Proper Functioning Condition.

Another of the five land health standards is #2 *Riparian systems* associated with both running and standing water, function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

As presented in Table 2 (section 1.6), this standard is not being achieved for the Spring Creek allotment. A causal factor for this determination was identified as livestock grazing and wild horse use around Wildcat Reservoir. Information used by the BLM interdisciplinary team to come to this determination is the proper functioning condition assessments for lotic (flowing water) riparian areas.

3.3.7 Wilderness/Wilderness Study Areas

Approximately 3,564 acres of the western portion of the McKenna Peak Wilderness Study Area (WSA), is contained in the HMA. The 1985 RMP and the 1990 San Juan/San Miguel Wilderness Environmental Impact Statement recommended this WSA as unsuitable for wilderness designation.

3.4 Additional Affected Resources

3.4.1 Special Status Species

The July 2010 USFWS list of Federally listed species for the San Juan BLM Resource Area was reviewed and no habitat is present for any of those species within the project area.

The list of Colorado BLM sensitive fish, plant and wildlife species (BLM Colorado Informational Bulletin 2010-007 December 2009) for the San Juan Public Lands was also reviewed. No habitat is

present in the project area for many of the sensitive species (see list in Appendix F). Habitat is present within the HMA for Western Burrowing Owl, Desert Spiny Lizard, and Longnose Leopard Lizard. Bald Eagles use portions of the HMA for wintering roosts. A suspected peregrine falcon aerie is located on the edge of the HMA. Use of this location as a nest site has not been confirmed.

Extensive plant surveys were completed during the rangeland health assessment field work and range inventory field work during the spring and summer of 2003. No sensitive species were seen during these surveys. Specific habitats such as seeps and springs were thoroughly searched. Although no sensitive species were seen, it is possible that several of these species could be present due to the extent of the area and amount of habitat present.

In 2006, a botanist with the Colorado Natural Heritage program surveyed the area through a grant with the BLM. The purpose of this survey was to look for a newly identified species of *Cryptantha*, which occupies habitat associated with gypsiferous soils. *Cryptantha gypsophila* is now a BLM Sensitive Species. There are several small occurrences known within the HMA. There are likely other unknown occurrences within the HMA in suitable habitat. Surveys of the known occurrences within the HMA in the spring 2010 showed no evidence of disturbance. The gather would have no effect on *C. gypsophila*. Surveys are being completed throughout San Miguel and Dolores Counties to determine how many populations of this species exist.

One of the five Land Health Standards is Standard 4: *Special status, threatened and endangered species* (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

As presented in Table 2 (section 1.6), this standard is currently being met and will not be discussed further.

3.4.2 Wild Horses

Detailed information about the HMA's history and the wild horse herd is provided the 1994 Spring Creek Basin HMAP and reaffirmed in 2005 through the Spring Creek Grazing Allotment/Spring Creek Basin HMA land health assessment and associated grazing permit renewal EA (CO-800-2005-027-EA).

Table 6 summarizes the AML, current population, and estimated removal numbers for the HMA under the Proposed Action.

Table 6 Summary of Wild Horse Population Information

HMA	Acres	AML Range	Current Pop.	Target Gather	Target Remove	Target Treat (# Mares)	Adjust Sex Ratio (# Studs)	Est'd Post Gather Pop. Size
Spring Creek Basin	21,932	35-65	90+	60	50	5	28 Based on May 2011 count	35

The last removal of excess wild horses from the Spring Creek Basin HMA was completed in August, 2007 when 86 horses were gathered and 76 were removed. Following the gather, a total of 10 animals (5 males and 5 females) were released back into the HMA. The un-gathered population was estimated at 30 animals for a total estimated post-gather population of 40 animals (about a 55/45 % male/female sex ratio). All release mares were given a fertility control vaccine PZP-22 prior to their release.

The current estimated population of wild horses is based on ground surveys completed since the last gather occurred in 2007 and with the most recent count in May, 2011 which includes the addition of the

2011 foal crop. Analysis of these data indicates an average annual growth rate of 23%/year since the last gather, even with application of fertility control.

Genetic Analysis

Genetics analysis was completed following gathers in 2000 and 2007. The genetic analysis was done by E. Gus Cothran from Texas A&M University (Appendix C). The analysis suggests the combined data indicate the herd is likely derived from riding breeds of North American origin. Compared to other Colorado herds, the Spring Creek Basin herd is most like the Little Bookcliffs population. The results received from Dr. Cothran indicate that it is likely that a reduction in variation has occurred due to the low population size after the 2000 gather. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American. Dr. Cothran's recommendations include current heterozygosity levels are near the critical low value and there is a suggestion of inbreeding. The AML for this herd is small so a continued loss of diversity is probable.

The relatively small size of this herd brings up serious concerns for genetic viability and variability, which is addressed in the HMAP as well as in environmental assessments EA CO-SJFO-01-053 and #EA-800-2005-027. As a solution, the HMAP encourages introduction of outside genetic material in the form of wild horses from other HA's or HMA's as a mitigation measure. In 1992 three stallions were obtained from a herd near Cody, Wyoming and released into Spring Creek Basin. In 2001 and again in 2008, three young mares from the Sand Wash HMA in northwest Colorado were released into the Spring Creek Basin HMA.

Current animal condition (health). Based on May 2011 observations animals are coming out of a relatively mild winter and are in good condition with excellent foal survival and body conditioning.

3.4.3 Wildlife

Although the San Juan/San Miguel RMP (1985) does not designate Spring Creek as deer and elk winter range, it is considered winter range by the Colorado Division of Wildlife. Abundant deer and elk sign was noted during the Land Health Assessment.

There is a minimal amount of aquatic wildlife habitat in the HMA.

3.4.4 Recreation

The primary recreation use within the project area occurs during big game hunting season (primarily October/November). Other recreational uses include driving for pleasure to view the wild horse herd and occasional use of all-terrain-vehicles on roads.

3.4.5 Soils

Spring Creek Basin lies within the Disappointment Valley syncline, with the Mancos shale formation exposed on the lower elevations, including the valley floor. The Dakota and Burro Canyon formations outcrop on the fringes of the syncline which comprise the higher elevations of the northeast portion of the basin.

Recent trend studies (summary charts in Appendix F) indicate that conditions continue to be declining or stable within the HMA. The trend studies only indicate whether conditions are improving, declining or remaining stable. The trend studies, without other information, do not indicate causal factors of current condition.

Erosion and salinity yields from the area are high. This is in part due to sparse vegetation cover, steep slopes, and erodible soil textures. Target basal vegetation cover values were set as objectives for the Spring Creek area to slow the accelerated rates of erosion and salinity. Basal vegetation cover is inversely correlated with soil erosion because of the protection it provides to the soil surface from the erosive forces of both rain drop impact and overland flow. The most recent monitoring data for the area shows the basal cover to range from 2-6%, well below site potentials of 10-15%. The low cover densities have been attributed to the combination of a year-round wild horse grazing, seasonal livestock use and seasonal big game herds of deer and elk. A reduction in wild horses would contribute to an improvement in vegetative cover. Seasonal shifts in precipitation distribution and drought conditions over the last few decades may have influenced vegetation cover in the area.

Another of the Land Health Standards is Standard 1: *Upland soils* exhibit infiltration and permeability rates that are appropriate to soil, type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

As presented in Table 2 (section 1.6) the Spring Creek Allotment/HMA is not achieving this standard due in part to livestock grazing and wild horse grazing. Elements that are not being met are vegetative cover which is too little and does not minimize surface runoff.

3.4.6 Vegetation

A rangeland health assessment was completed on the Spring Creek Grazing Allotment in 2003 was summarized in the 2005 wild horse gather EA (CO-800-2005-027EA) and is included in Appendix F. The decisions from this analysis led to a reduction in authorized livestock grazing² and continuation of the current wild horse AML³. The grazing allotment encompasses the entire Herd Management Area (HMA), as well as about 1,100 acres that are outside of the HMA. All land health assessment areas in the allotment were also within the HMA. This assessment evaluated ecological sites on the allotment comparing existing site conditions to those expected for the site at potential condition. Ecological sites are areas with uniform soils and topography that produce a distinct natural (reference) plant community.

Rangeland Health Assessment attribute ratings and vegetation condition ratings from the 2003 assessment were summarized in CO-800-2005-027 EA and are included in Appendix F for background but have not been updated in recent years.

The Land Health Standard related to Vegetation is Standard #3: *Healthy productive plant and animal communities* of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plant and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

Elements of the standards for public land health which were not met in the 2003 Land Health Evaluation were cover, density, composition, and frequency of species in relation to potential; and photosynthetic activity throughout the growing season. Based on recent observations of long-term trend study transects (discussed below) these elements still appear to not being met.

³ FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD for ENVIRONMENTAL ASSESSMENT #CO-800-2005-027EA: WILD HORSE APPROPRIATE MANAGEMENT LEVEL (AML) in the SPRING CREEK BASIN HERD MANAGEMENT AREA (HMA)

The Spring Creek Basin Wild Horse HMAP set a forage demand objective to provide sufficient forage for wild horses, wildlife, livestock and watershed functioning to be measured by livestock and wild horse utilization, vegetation trend and ground cover. Objectives were revised in the 2005 EA and associated grazing and wild horse decisions to reflect desired plant conditions (using key species) for each of the ecological sites in the HMA.

The five long-term vegetation trend studies on the allotment, originally established in the early 1980's, were all re-measured in 2010. Standard protocol is to read these transects every five years. One study had a mixed trend in condition, one was stable and the remaining three continue to have an apparent downward trend. The studies occur on three of the dominant ecological sites on the allotment, representing about 44% of the allotments suitable acres. Upland vegetation has shown a decline in cool season native grass species. Trend studies on the allotment indicate primarily a downward to static trend in range condition (ecological seral stage). Because the wild horse unit makes up all but 1,100 acres of the allotment, and because wild horses graze year-round, wild horse grazing is a major factor causing the continued downward to static trends in range condition.

Ground cover values continue to be low on the Spring Creek allotment with high amounts of bare soil. The highest amount of bare soils measured was 75% and the lowest 49%. Many of the soils in this area have a high hazard of water erosion with rapid rates of runoff and slow permeability. Wild horse grazing which occurs year-round, diminishes ground cover or inhibits the recolonization of plants.

4.0 Environmental Consequences

4.1 Introduction

This section of the EA documents the potential environmental impacts which would be expected with implementation of the Action Alternatives (Alternatives 1-2), and/or the No Action Alternative. These include the direct impacts (those that result from the management actions) and indirect impacts (those that exist once the management action has occurred).

4.2 Predicted Effects of Alternatives

The direct and indirect impacts to these resources which would be expected to result with implementation of the Action Alternatives or No Action Alternative are discussed in detail below. Where applicable, Land Health standards are also discussed.

4.2.1 Invasive Species

Impacts Common to Action Alternatives (1-2)

Since the proposed project would utilize existing disturbed sites to gather and process the wild horses, these sites may easily be checked and pre-treated for weeds by the BLM. There would be a potential for a short term increase in weeds at the gather and holding sites. However, due to our close monitoring of these sites, early detection and rapid response would result in no long-term increases in invasive weed populations. It is anticipated that noxious weed populations would not increase as a result of the Proposed Action or Alternative 2. Only noxious-weed-free hay would be utilized on public lands during the proposed gather operation.

Impacts of Alternative 3 (No Action)

There would be no short-term increase in weeds because the gather would not occur. However, overgrazing of palatable native plants by excessive horse numbers would increase mortality and loss of vigor in native plants, providing less competition for the unpalatable weedy species.

4.2.2 Livestock/Rangeland Management

Impacts to livestock would be similar to those describe in the livestock permit renewal and last gather decision EA's (CO-800-2005-027; CO-800-2007-077). Following is a summary of impacts disclosed.

Impacts Common to Action Alternatives (1-2)

Reduced competition between livestock and wild horses for the available forage and water would result. Indirect impacts would include an increase in the quality and quantity of the available forage in the short-term. Over the longer-term, improved vegetation resources would lead to a thriving natural ecological condition. The proposed removal of excess horses would lead to increased production and availability of desirable plants, for use by wildlife, livestock and for soil production/protection.

Impacts of Alternative 3 (No Action)

Forage available for utilization by authorized livestock has been directly impacted due to the current excess use by wild horses. The current wild horse population is approximately 1.4 times the upper AML forage allocation for horses. The indirect impacts of No Action (Defer Gather and Removal) would be continued excessive forage use by horses, continuing competition between livestock, wild horses and wildlife for the available forage and water, resulting in reduced quantity and quality of forage and water.

4.2.3 Migratory Birds

Impacts Common to Action Alternatives (1-2)

There would be no impacts to migratory birds under the Proposed Action or Alternative 2. The gather is expected to occur in late summer/early fall with additional PZP darting in mid winter, well outside the nesting season for these species. Winter bald eagle roosts would not be impacted by PZP darting in mid winter.

Impacts of Alternative 3 (No Action)

Under the No Action Alternative, continued degradation of the vegetation may impact these birds over the long-term through loss of habitat.

4.2.4 Recreation

Impacts Common to Action Alternatives (1-2)

Due to limitations on access in the gather areas, the general public may be inconvenienced due to activities associated with the project. A temporary closure within the Herd Management Area is a part of the Proposed Action and Alternative 2. Emergency vehicles, vehicles associated with the gather operation, and escorted observers would be exempt from the closure. (See Appendix D for a sample of the proposed Closure Order.) Neither of the action alternatives would have long-term adverse impacts on the recreational opportunities present in the area.

Immediately after the proposed gather, the short term impacts would be reduced viewing opportunities since there would be fewer horses present in the HMA and the remaining horses would be more fearful of humans. Over the long term, viewing opportunities would increase, as this action would help provide a healthy and productive habitat for the horses.

Impacts of Alternative 3 (No Action)

There would be no short-term reduction in opportunities to view wild horses because the gather would not occur.

4.2.5 Special Status species

Impacts Common to Action Alternatives (1-2)

No habitat exists and no effects would occur for federally listed species.

Of the BLM sensitive species with habitat in the project area (western burrowing owl, desert spiny lizard, and longnose leopard lizard), there would be no impacts from the horse gather activities. Horse gathering activities are not planned during the time of year when bald eagles use the winter roost sites so there would be no effect. Horse gathering activities would not impact peregrine falcons since nesting would be complete prior to the gather.

It is expected that proposed removal of excess wild horses would improve public land health conditions in general, including habitat for most special status species. Horse gathering activities would not impact peregrine falcons since nesting would be complete prior to the gather. Bats would not be impacted by the activities since they would be in roost sites during the day.

None of the trap locations are in the vicinity of the sensitive plant species- *Cryptantha*

gypsophila. Therefore impacts to the species from the action alternatives are unlikely.

Impacts of Alternative 3 (No Action)

The No Action Alternative would lead to degraded habitat conditions for most special status species.

4.2.6 Soils

Impacts Common to Action Alternatives (1-2)

Direct impacts associated with the action alternatives would consist of disturbance to soil surfaces immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses, and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these sites would be small (less than one half acre) in size. Any impacts would remain site specific and isolated in nature. Impacts would be minimal as herding would have a short-term duration.

In addition, most gather sites and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment. Normally, they are located near or on roads, pullouts, water haul sites or other flat areas, which have been previously disturbed. These common practices would minimize the long-term effects of these impacts.

Implementation of the action alternatives would reduce the current wild horse population. Reduced concentrations of wild horses would contribute to a reduction of soil erosion. This reduction would be most notable and important in the vicinity of small spring meadows currently with high levels of disturbance and bare ground.

Alternatives 1 and 2 would progress towards meeting Land Health Standard #1 *Upland Soils*.

Impacts of Alternative 3 (No Action)

No direct impacts are expected under this alternative. In the absence of a wild horse gather, soil loss from wind and water erosion, and invasion of undesired plant species would occur as a result of over-utilization of vegetation, loss of perennial native grasses and heavy trailing.

4.2.7 Vegetation/Ecological Sites

Environmental assessment CO-800-2005-027 evaluated the effects of wild horse and livestock use in Spring Creek Basin using information collected in the 2003 Land Health Assessment. Impacts to vegetation/ ecological sites would be similar to those describe in that document and affirmed in the 2007 wild horse gather EA (CO-800-2007-077). A synopsis of impacts from these documents follows:

Impacts Common to Action Alternatives (1-2)

Direct impacts associated with the action alternatives would consist of disturbance to vegetation immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses, and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these sites would be small (less than one half acre) in size. Any impacts would remain site specific and isolated in nature. These impacts would include trampling of vegetation. Impacts would be minimal as herding would have a short-term

duration.

In addition, most gather sites and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment. Normally, they are located near or on roads, pullouts, water haul sites or other flat areas, which have been previously disturbed. These common practices would minimize the long-term effects of these impacts.

Implementation of the action alternatives would reduce the current wild horse population to the established AML and provide the opportunity for the vegetative communities to progress toward achieving a thriving natural ecological balance. Removal of wild horses would result in decreased harvest of vegetation. Maintenance of herd levels combined with dormant season use by livestock should move plant community toward a more desirable mix of species. Both action Alternatives would lead to both short and long term improvements in the plant community aspect of rangeland health.

Trend studies in the HMA continue to show a static to downward trend supporting the 2005 decision³ to keep the wild horse AML at the current level. Horse use impacts the ecological sites year round as opposed to livestock which graze only during the dormant season, also livestock can be in non-use during periods of plant stress to allow for plants to thrive. Removal of excess wild horses would maintain or improve current ecological site conditions.

Alternatives 1 and 2 would progress towards meeting Land Health Standard #3 *Healthy Productive Plant and Animal Communities*

Impacts of Alternative 3 (No Action)

Indirect impacts include increased competition for forage among multiple-uses as wild horse populations continue to increase. Forage utilization would continue to exceed the capacity of the range resulting in a loss of desired forage species from plant communities as plant health and watershed conditions deteriorate. Abundance and long-term production potential of desired plant communities may be compromised potentially precluding the return of these vegetation communities to their full potential as identified in ecological site descriptions.

Alternative 3 would not contribute towards meeting Land Health Standard #3.

4.2.8 Wetlands and Riparian Areas

Impacts Common to Action Alternatives (1-2)

Riparian functionality would not be expected to improve with a reduction in wild horse numbers. Wildcat Canyon above BLM Road 410 would be expected to remain FAR with no change in trend. The FAR rating is due to activities upstream and conditions around Wildcat Reservoir which would not be expected to change as a result of the Proposed Action. Below BLM Road 410, riparian functionality would remain in PFC. Bassnet Point Spring would remain in PFC. These conclusions are consistent with the conclusions drawn in the Spring Creek Basin Wild Horse Herd Management Area Plan written in 1994 by the Montrose BLM District where changes in upland conditions were expected to have little effect on the trend and condition of riparian areas due to concentration of horses where water is scarce and the year-round use by horses continuing to affect riparian areas even with reduced numbers.

Alternatives 1 and 2 contribute towards Land Health Standard #2 *Riparian Systems*.

Impacts of Alternative 3 (No Action)

The No Action Alternative would eventually lead to large numbers of horses within the herd area that could potentially have a direct affect on riparian functionality of Wildcat Canyon below BLM Road 410. Large numbers of horses combined with existing livestock use of this section of Wildcat Canyon could lead to a downward trend and a functional-at risk rating due to concentrated use of the stream channel.

Alternative 3 does not contribute towards meeting Land Health Standard #2

4.2.9 Water Quality

Impacts Common to Action Alternatives (1-2)

Direct impacts to water quality occur when wild horses cross streams or springs as they are herded to temporary gather sites. This impact would be temporary and relatively short-term in nature. Indirect impacts would be related to wild horse population size. Reduction of wild horse populations from current levels would decrease competition for available water which should lead to a reduction in hoof action (sediment), nutrients, and bacteria in surface waters. Achievement of the AML would also result in increased residual vegetation (increased stubble heights) that would decrease surface disturbance, increase vegetation cover leading to improved water temperatures and water availability.

Impacts of Alternative 3 (No Action)

There would be no direct impacts. Indirect impacts would be increasing degradation to water quality as wild horse populations remain above AML and increase each year that a gather is postponed. Water quality would remain in a degraded state on heavily grazed spring sources and brooks due to removal of standing crop, compaction, and deposition of manure leading to increased disturbance and levels of bare ground. The increasing population of wild horses would exacerbate use on existing limited waters and compound impacts described here.

4.2.10 Wildlife

Impacts Common to Action Alternatives (1-2)

The action alternatives would help reduce competition between horses and big game for forage.

The long-term benefits to the range are positive to virtually all desirable wildlife species that occupy the area. Under the action alternatives riparian areas would receive reduced use and potentially be impacted less directly.

Selection of the Proposed Action or Alternative 2 would have a positive effect on the Land Health Standard #3 *Healthy Plant and Animal Communities*, (partial, see also Vegetation and Wildlife, Terrestrial), with a long term decrease in fertility rates of horses and future gathers.

Impacts of Alternative 3 (No Action)

The No Action Alternative would likely result in continued competition for forage in the HMA. The No Action Alternative would have a negative impact because more horses would utilize the riparian areas, and thereby affect aquatic wildlife and their habitat. See also the preceding riparian section.

The No Action Alternative would have a negative effect on the Land Health Standard.

4.2.11 Wilderness Study Area

Impacts Common to Action Alternatives (1-2)

The helicopter may occasionally land during the gather operation to prevent over-exertion of the horses. These landings may be inside the boundary of the McKenna Peak WSA, although it has not been necessary in any of the previous gathers. It is possible that temporary traps constructed of portable steel panels might be erected in the WSA (located at T.42.N. R.15W., S29 SW1/4; S30 SE1/4). These actions are permissible under the *"Interim Management Policy and Guidelines for Lands Under Wilderness Review"*, as stated in Chapter I-B-2, Nonimpairment, Chapter I-B-11, Motor Vehicles, Aircraft, and Mechanical Transport, and, Chapter III-E, Wild Horse and Burro Management. No permanent traps or other facilities would be established in the WSA for this project.

Over the long-term the Proposed Action would improve ecological conditions, thereby enhancing wilderness values. Should it be necessary to temporarily land the helicopter in the WSA, the impacts would be short term and would not impair the area's wilderness suitability?

Impacts of Alternative 3 (No Action)

The No Action Alternative would lead to a degradation of wilderness values as herd populations remain above AML would continue to grow and affect ecological and land health conditions.

4.2.12 Wild Horses

Results of Win Equus Population Modeling

The Action Alternatives (1-2) were modeled using Version 3.2 of the Win Equus population model (Jenkins, 2000). The purpose of the modeling was to analyze and compare the effects of the Action Alternatives on population size, average population growth rate, and average removal number. Table 7 summarizes the results. See Appendix E for additional detail.

Table 7 Mean Population Size, Growth Rates, Next Projected Gather Year

Alternative	Mean Pop. Size (6 years)	Mean Growth Rate Next 5 Years (%)	Next Projected Gather (Year)	Est'd No. to Remove (Next Gather)
Alternative 1 - Proposed Action- Gather to low AML (fertility control with PZP)	81	14.2%	2016	33
Alternative 2 – Gather to Low AML (fertility control with PZP-22).	96	18.3%	2015	34
No action	254	18.9%	2012	72

Jenkins Wild Horse Population Model

Appendix E is a wild horse population modeling exercise, using a model developed by Dr. Stephen H. Jenkins of the University of Nevada Reno. Dr. Jenkins describes his WinEquus model as "...a computer program that simulates the population dynamics of feral horses. It...is designed for use in comparing various management strategies for feral horses." In analyzing the Proposed Action and two alternatives, BLM used current age selection management directives and the Spring Creek Basin AML range of 35 to

65 horses. BLM assumed that the gather data collected in 2007 would be representative of current herd demographics and we proportioned the expected age and sex structure of the 2011 pre-gather herd using the 2007 information. The population model was then used to simulate decreasing the herd to 35 horses every four years using current age selective removal management directives with initiation of PZP immunocontraceptive over 5 years (the Proposed Action), age selective removal every four years with use of a 22 month immunocontraceptive (Alternative 2), and what the model terms no management (No Action Alternative).

The best use of the model is to answer specific questions, for example: under different alternatives, what is the likelihood that herd will crash; would fertility control impact herd growth rates; is one alternative strategy most likely to provide more desirable outcomes?. The model is not designed to be use in reverse fashion, for example to predict a specific herd size as a result of certain management decisions. The model is thought to be less useful when applied to very small herd sizes, like the Spring Creek Basin herd.

Modeling studies with 100 trials per simulation supported the premise that the Spring Creek Basin herd can be expected to continue to rebound in size and desirable sex ratio following the 2011 proposed action with PZP fertility control, or the selective removal and PZP22 fertility control alternative.

In each of the trials run, lowering the herd to 35 animals, while taking into consideration environmental variables programmed into the simulations, did not result in the population falling below its capacity to rebound. The model runs resulted in an average population growth 5-24% under the proposed action, with a 5-27% growth rate projected for selective removal paired with immunocontraception. The population model suggests that the herd would exceed the 65 adults upper management range when gathered every 4th year, under both the alternative 2 and the no action. Because of the conservative nature of the model, the BLM assumes that any gather proposal that appears sound in the model will also be appropriate in the HMA.

Impacts common to Action Alternatives (1-2):

The BLM has been actively conducting wild horse gathers since the mid 1980's within the HMA. Through this time, methods and procedures have been identified and refined throughout the western states to minimize stress and impacts to wild horses during implementation of wild horse gathers. The SOPs outlined in Appendix A would be implemented to ensure a safe and humane gather occurs and would minimize potential stress and injury to wild horses.

Nationwide the BLM gathers approximately 10,000 horses and burros annually with a proposed strategy to reduce this number to 7,600. This experience affirms that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective and practical means for the gather and removal of excess wild horses and burros from the public lands. BLM also avoids gathering wild horses prior to or during the peak foaling season and does not conduct helicopter removals of wild horses during March 1 through June 30.

Over the past 30 years, various impacts to wild horses from wild horse gathers have been observed. Individual, direct impacts to wild horses include handling stress associated with the roundup, capture, sorting, animal handling, and transportation of the animals. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. The horse is a very adaptable animal and would assimilate into the environment with new members quite easily. Observations made through completion of gathers shows that captured wild horses acclimate quickly to the holding corral situation, becoming accustomed to water tanks and hay, as well as human presence. Injuries sustained by wild horses during gathers include nicks and scrapes to legs, face, or body from

brush or tree limbs while being herded to the trap corrals by the helicopter. Rarely, wild horses will encounter barbed wire fences and will receive wire cuts. These injuries are not fatal and are treated with medical spray at the holding corrals until a veterinarian can examine the animal.

Most injuries are sustained once the horse has been captured and is either within the trap corrals or holding corrals, or during transport between the facilities and during sorting. These injuries result from kicks and bites, and from animals making contact with corral panels or gates. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting and move the horses into the large holding pens to settle in with hay and water. Injuries received during transport and sorting consist of superficial wounds of the rump, face, or legs. Despite precautions, occasionally a wild horse will rear up or make contact with panels hard enough to sustain a fatal neck break, though such incidents are rare. There is no way to reasonably predict any of these types of injuries. On many gathers, no wild horses are injured or die. On some gathers, due to the genetic background of the horses they are not as calm and injuries are more frequent. Overall, however, injuries and death are not frequent and usually average less than 0.5%.

Though some members of the public have expressed the view that helicopter gathers are not humane, most injuries occur once the horses are captured, and similar injuries would also be sustained if horses were captured through bait trapping, as the animals would still need to be sorted, aged, transported and otherwise handled. During the actual herding of horses with a helicopter, injuries are rare, and consist of scrapes and scratches from brush, or occasionally broken legs from horses stepping into a rodent hole. Serious injuries requiring euthanasia could occur in 1-2 horses per every 1000 captured based on prior gather statistics.

Indirect individual impacts are those impacts which occur to individual horses after the initial stress event, and may include spontaneous abortions in mares, and increased social displacement and conflict in studs. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief skirmish which occurs with older studs following sorting and release into the stud pen which lasts less than two minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises, which don't break the skin. Like direct individual impacts, the frequency of occurrence of these impacts among a population varies with the individual. Spontaneous abortion events among mares following capture is rare.

Through the capture and sorting process, wild horses are examined for health, injury and other defect. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to SOPs Appendix A). Animals that are euthanized for non-gather related reasons include those with old injuries (broken hip, leg) that have caused the animal to suffer from pain or prevents them from being able to travel or maintain body condition; old animals that have lived a successful life on the range, but now have few teeth remaining, are in poor body condition, or are weak from old age; and wild horses that have congenital (genetic) or serious physical defects such as club foot, or sway back and would not be successfully adopted, or should not be returned to the range.

The wild horses that are not captured may be temporarily disturbed and move into another area during the gather operations. With the exception of changes to herd demographics, direct population wide impacts have proven, over the last 20 years, to be temporary in nature with most if not all impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence.

There is also a slight risk that a catastrophic event, such as drought, or disease, could reduce the herd to a large extent, when it is at the lowest end of the AML, enough that there would be a substantial loss of genetic material from the herd due to unexpected deaths. It appears theoretically possible that immunocontraception could further reduce the gene pool in an already small herd, when the herd would have a difficult time rebounding if some of the mares did not reproduce following a catastrophic event. The WinEquus Wild Horse Population model, with 100 trials, never predicted this as an outcome of the Immunocontraceptive Alternatives. Fertility control in yearlings and 2-year old females would allow these horses an opportunity to fully mature before becoming pregnant, as well as allow the older mares to achieve improved individual body condition until their next foaling. Mitigation for genetic loss in the Spring Creek Basin HMA was considered in the CO-800-2001-053 EA with the decision to introduce additional mares from other HMAs every other gather.

Transport, Short Term Holding, and Adoption (or Sale) Preparation

About 50 excess horses would be removed. Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From there, they would be made available for adoption or sale to qualified individuals or to long-term holding (grassland) pastures.

Wild horses selected for removal from the range are transported to the receiving short-term holding facility in a straight deck semi-trailers or goose-neck stock trailers. Vehicles are inspected by the BLM COR or PI prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments. A small number of mares may be shipped with foals. Transportation of recently captured wild horses is limited to a maximum of 8 hours. During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or die during transport.

Upon arrival at the short term holding facility, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian examines each load of horses and provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA). Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. Some of these animals are in such poor condition that it is unlikely they would have survived if left on the range. Similarly, some mares may lose their pregnancies. Every effort is taken to help the mare make a quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale. Preparation involves freeze-marking the animals with a unique identification number, drawing a blood sample to test for equine infections anemia, vaccination against common diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

At short-term corral facilities, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

Adoption or Sale with Limitations, and Long Term Holding

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and the horse and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 5750.

Potential buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption three times. The application also specifies that all buyers are not to re-sell the animal to slaughter buyers or anyone who would sell the animal to a commercial processing plant. Sales of wild horses are conducted in accordance with Bureau policy.

Between 2007 and 2009, nearly 62% of excess wild horses or burros were adopted and about 8% were sold with limitation (to good homes) to qualified individuals. Animals 5 years of age and older are transported to long-term holding (LTH) grassland pastures. The BLM has maintained LTH pastures in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTH are similar to those previously described. One difference is that when shipping wild horses for adoption, sale or LTH, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel.

LTH pastures are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. There wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. About 22,700 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private land pastures in Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTH pastures are highly productive grasslands as compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

Mares and castrated stallions (geldings) are segregated into separate pastures except one facility where geldings and mares coexist. Although the animals are placed in LTH, they remain available for adoption or sale to qualified individuals. No reproduction occurs in the long-term grassland pastures, but foals

born to pregnant mares are gathered and weaned when they reach about 8-10 months of age and are then shipped to short-term facilities where they are made available adoption. Handling by humans is minimized to the extent possible although regular on-the-ground observation and weekly counts of the wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals may be humanely euthanized if they are in very thin condition and are not expected to improve to a BCS of 3 or greater due to age or other factors. Natural mortality of wild horses in LTH pastures averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). The savings to the American taxpayer which results from contracting for LTH pastures averages about \$4.45 per horse per day as compared with maintaining the animals in short-term holding facilities.

Euthanasia and Sale without Limitation

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is authorized under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010 for this purpose. It is unknown if a similar limitation will be placed on the use of FY2011 appropriated funds.

Impacts of Proposed Action: Removal of Excess Horses with use of PZP Immunocontraceptives.

In addition to the gather impacts above, dispersal of bands during winter inoculations with PZP may occur; Dispersal would be limited as the expected number of mares darted would be approximately 5. The highest success obtained for fertility control has been achieved when applied during the timeframe of November through March. Refer to Appendix B for more information about fertility control research procedures. Fertility control with annual PZP injections of selected mares would increase the time between gathers as experience with the Little Book Cliffs herd has shown. There is a potential for loss of genetic material from the herd due to unexpected deaths from a catastrophic event (fire, disease, drought, etc.) when the number of reproductive females are at their lowest level (immediately after a gather). The Jenkins Model simulations predict the likelihood of this to be very, very low.

Any mares that are treated with PZP will foal normally in the spring of 2012. Based on past experience, approximately 75% of breeding-aged mares will foal and 25% will not.

Impacts of Alternative 2: Removal of excess horses with use of PZP-22 Immunocontraceptives

Impacts of gathering wild horses would be the same as under the Proposed action alternative. Fertility control using PZP-22 in the Spring Creek Basin herd in the 2007 gather proved to be ineffective. Without effective fertility control future gathers would be expected to occur every 4-5 years with a corresponding frequency of impacts to individual wild horses and the herd as a whole.

Impacts of Alternative 3 (No Action)

The No Action Alternative would not remove horses from the HMA. The animals would not be subject to the individual direct or indirect impacts as described above as a result of a gather operation. However, they would experience individual direct and indirect impacts as a result of the increased demand for water and forage as the herd population grows. This alternative would not achieve legal mandates or planning objectives. Horses would expand outside of any herd area boundaries, in violation of the WRFHBA. This alternative is in conflict with the RMP emphasis on water quality: erosion and salinity management for lands in the HMA.

Under the WinEquus Wild Horse Population modeling exercise, running 100 trials, the average population size in 11 years under the No Action Alternative was from 291 to 805 horses. In the Spring Creek Basin HMA this number of horses would severely degrade the habitat and lead either to widespread starvation or escape of the horses, or both.

4.2.13 Cultural Resources

Impacts common to All Alternatives

No NRHP eligible properties would be adversely affected from the projects proposed activities or the alternatives. Additionally, no known traditional Native American use areas or sacred areas exist within the project area and no known Protected Paleontological resources would be affected by the Proposed Action or the alternatives.

4.3 Cumulative Effects for All Alternatives

The NEPA regulations define cumulative impacts as impacts on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impacts study area (CSA) for the purposes of evaluating cumulative impacts is the Spring Creek Basin HMA.

According to the 1994 BLM *Guidelines for Assessing and Documenting Cumulative Impacts*, the cumulative analysis should be focused on those issues and resource values identified during scoping that are of major importance. Accordingly, the issues of major importance to be analyzed are: wild horses and vegetation/ecological site productivity/rangeland health.

4.3.1 Past and Present Actions

Wild Horses

The actions which have influenced today's wild horse population are primarily wild horse gathers which have resulted in the capture of some 544 wild horses, the removal of 427 excess horses, the release of 3 stallions and 6 mare's from other HMA's genetic variation. (See Table 1 in section 1.2.2). Past selective removal gathers may have altered the age structure, composition, and sex ratios of the wild horse populations.

Vegetation/Ecological Site productivity/Rangeland Health

Through previous decisions, the BLM has allocated the available forage to wild horses, wildlife and domestic livestock. Other decisions have resulted in adjustments to livestock numbers and seasons of use and for implementation of grazing systems and the associated range improvements to promote rangeland health. The current level of permitted livestock grazing use is 16 % (326/2005) of that permitted in 1971 when the WFRHBA passed.

4.3.2 Reasonably Foreseeable Future Actions

Wild Horses

Over the next 10-20 year period, reasonably foreseeable future actions include periodic gathers to remove excess wild horses in order to manage population size within the established AML range. Population control methods proposed in the April, 1994 approved Herd Management Area Plan and analyzed for the 2007 gather (CO-800-2007-077EA) would also be implemented during future gathers. Any future wild

horse management would be analyzed in appropriate environmental documents following site-specific planning with public involvement with updated resource information.

Other reasonably foreseeable future actions include the transport, handling, care and disposition of wild horses removed from the range. Initially wild horses would be transported from the capture/temporary holding corrals to a designated BLM short-term holding corral facility. From there animals would be made available for adoption, or sale to individuals who can provide a good home, or to long term holding pastures in the Midwest.

Vegetation/Ecological Site Productivity/Rangeland Health

Livestock grazing is expected to continue at similar stocking rates and utilization of the available vegetation (forage) would also be expected to continue at similar levels. Grazing of livestock would occur in a manner consistent with grazing permit terms and conditions.

4.3.3 Summary Of Past, Present And Reasonably Foreseeable Future Actions

Wild Horses

While the past horse gathers and wild horse management have resulted in a healthy population today, the future health and genetic viability of the herd could be compromised in the future unless action is taken. When the past and reasonably foreseeable future actions are considered with Alternatives 1 or 2 the result is the continued health, well being and genetic viability of the herd. Under Alternative 1, the cumulative effects of yearly fertility control treatments of selected mares would decrease the herd fertility rate leading to less frequent gathers. Animals may be harder to approach for PZP darting as animals become wary of human activity within the HMA. Experience with timed release PZP-22 vaccinations after the 2007 gather would indicate that this treatment does not reduce the herd fertility rate and thus gather frequency would continue to occur every 4 years thus increasing impacts to wild horses. The primary differences among the Action Alternatives would be to growth rates and subsequent population sizes into the future until another gather becomes necessary to remove excess wild horses.

When the past and reasonably foreseeable actions are combined with No Action – Alternative 3, the result is a downward trend in forage and water resources that would reduce overall health and vigor of the herd in the long run. Under the No Action Alternative, the wild horse population could exceed 200 (90+ current horse population with an estimated 23% increase per year) in four years. Movement outside the HMA would be expected as greater numbers of horses search for food and water. This could affect livestock grazing in adjacent allotments. Heavy utilization of the available forage would be expected and horses would increase use of poor quality water and poisonous forage as was experienced through horse deaths in 1991 and blood tests for liver health 1995 and 2007. Emergency removals could be expected in order to prevent individual animals from suffering or death as a result of insufficient forage and increased use of poor quality forage and water.

Vegetation/Ecological Sites

While the present livestock grazing system, and past reductions in livestock numbers, and efforts to manage the wild horse population within AML has reduced past historic impacts, the current condition includes areas of heavy vegetation utilization, trailing and trampling damage and is preventing the BLM from managing for rangeland health and a thriving natural ecological balance and multiple use relationship on the public lands in the area. When Alternatives 1 or 2 are considered along with the livestock grazing management, the combined effect will progress towards improved rangeland health.

When the No Action Alternative 3 is considered along with livestock grazing management the expected result is continued downward or static trends in rangeland health.

5.0 **Monitoring and Mitigation Measures**

The BLM Contracting Officer's Representative (COR) and Project Inspector (PI) assigned to the gather would be responsible for ensuring contract personnel abide by contract specifications and the SOP's (Appendix A).

Ongoing monitoring of forage condition, utilization, trend, would be conducted periodically by BLM personnel. Volunteer cooperators along with BLM personnel would monitor water availability, survey populations and evaluate animal health of the horses.

Fertility control monitoring would be conducted in accordance with the SOPs (Appendix B). Yearly fertility vaccinations of selected mares would usually be conducted in January-March of each year by BLM personnel and qualified volunteers.

Future gathers would incorporate the release of mares from other HMA's to improve genetic diversity as recommended by genetic evaluations and per the 2001 decision (CO-800-2001-053).

6.0 List of Preparers

Name	BLM/Forest Service Title	Area of Responsibility
Fran Ackley	Colorado BLM State Office Wild Horse Program Leader	Wild Horses
Connie Clementson	Acting Dolores Public Lands Manager	BLM Authorized Officer/Decision Maker
Jim Dollerschell	Rangeland Management Specialist-Grand Junction Field Office	Wild Horses
Jennifer Jardine	Rangeland Management Specialist	Rangeland Management
Shauna Jensen	Hydrologist	Surface & Ground Water, Riparian
Melissa Kindall	Range Technician(Wild Horse Specialist)- White River Field Office	WinEquus wild horse population modeling
Deborah Kill	NEPA Coordinator	Document Review
Cara Macmillan	Ecologist	Soils, Plant Communities, TES Plants
Ivan Messinger	Wildlife Biologist	Terrestrial & Aquatic Wildlife, TES Animals
Tom Rice	Associate Manager, Dolores Public Land Office	BLM Authorized Officer/Decision Maker
Gary Thrash	Environmental Consultant	Lead for environmental analysis,
Wayne Werkmeister	Associate Field Manager- Grand Junction Field Office	Wild horses

7.0 Consultation and Coordination

7.1 Public hearings

As required by 43 CFR 4740.1(b), a public hearing was held on April 25, 2011, to take comments regarding the use of helicopters and other motor vehicles in gathering the Spring Creek horses. The hearing was held at the Dolores Public Lands Office located at 29211 Highway 184, Dolores, Colorado; and was immediately followed by a less formal public meeting where a question and answer forum was provided on the proposed gather. A new release on the April 25th public hearing and scoping meeting was released for publication in local news media on April 11, 2011.

Four participants from the public hearing made recorded verbal comments.

These comments focused on:

- The management of the helicopter in a manner that did not pressure the heard causing excessive stress on horses.
- Gathering by band, and not separating them.
- Avoid gathering introduced mares.
- A desire to review the Standard Operation Procedures in the contract in an effort to ensure acceptable helicopter use that reduced the stress on horses.
- A request to not gather horses with the "FA" freeze band.
- Transporting animals in smaller numbers.
- Enlist experienced hands at the gather.
- Address mineral baiting and trapping rather than using helicopters.

Many of these comments were not within the scope of the Helicopter hearing but addressed issues to be considered in the EA.

7.2 Tribes, Individuals, Organizations, or Agencies Consulted

A local wild horse advocacy group the Disappointment Wild Bunch (affiliated with the Colorado Chapter of the National Mustang Association (NMA)), has worked closely with BLM on several projects and have been consulted regarding both the proposed gather and the adoption planned immediately afterward at the Montezuma County Fairgrounds. In

The Four Corners Chapter of the Back Country Horsemen has helped obtain horse counts in the Spring Creek Basin HMA for several consecutive years. They also have been consulted regarding the proposed gather and subsequent local adoption. Some members have expressed an interest in observing the gather but none have expressed any specific concerns relative to the gather or adoption.

8.0 Public Involvement

Initial notification of the proposed gather to the general public occurred on April 1, 2011 when project was posted on the San Juan Public Lands Center Nepa Register (http://www.blm.gov/co/st/en/BLM_Information/nepa/sjplc.html).

On April 8, 2011 a **Notice of Public Hearing and Scoping Meeting** letter along with a news release to local newspapers requesting feedback on the proposed action, possible alternatives, and potential issues that should be addressed in the NEPA process was sent to 80 interested publics, organizations, government agencies. Those notified included wild horse advocacy groups, individuals who have expressed an interest in the Spring Creek Basin wild horse herd, the BLM livestock grazing permittee, the Colorado State Land Board, the Colorado Division of Wildlife, San Miguel County, Dolores County, and Montezuma County. An open forum meeting was held on April 25, 2011 to provide an overview of the proposed gather and discuss issues and concerns regarding the Spring Creek Basin Wild Horse Herd management. Scoping comments were received through May 13, 2011. Section 1.8 summarizes issues identified through scoping for the 2011 gather.

The gather plan preliminary EA was posted on the BLM web page at <http://www.blm.gov/co/st/en/fo/sjplc.html> and made available for a 30 day comment period. Comments received and responses are in Appendix G.

9.0 List of References

BLM. 1985. San Juan/San Miguel Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management. San Juan Field Office. Durango, Colorado. As Amended in 1991, 1993, 1997, and 2000.

Cothran, E. Gus. 2010. Genetic Analysis of the Spring Creek Basin HMA, CO. Department of Veterinary Integrative Bioscience, Texas A&M University June 21, 2010.

Gray, Meghan E.; David S. Thain, Elissa Z. Cameron, Lowell A. Miller. 2010. [Multi-year fertility reduction in free-roaming feral horses with single-injection immunocontraceptive formulations](#). Wildlife Research, Vol. 37 No. 6 Pages 475 - 481, Published 18. October 2010.

Kirkpatrick Ph.D., Jay F; Allen T. Rutberg, Ph.D., and Linda Coates-Markle. 2010. Immunocontraceptive Reproductive Control Utilizing Porcine Zona Pellucida (PZP) in Federal Wild Horse Populations (Third Edition). Compiler and Editor Patricia M. Fazio, Ph.D. June 1, 2010.

GAO-09-77. United States Government Accountability Office. 2008. Report to the Chairman, Committee on Natural Resources, House of Representatives, BUREAU OF LAND MANAGEMENT-Effective Long-Term Options Needed to Manage Unadoptable Wild Horses. October 2008.

Ransom, Jason I. et. al. 2010. Influences of immunocontraception on time budgets, social behavior, and body condition in feral horses. Applied Animal Behavior Science 124 (2010) 51-60.

Singer, Francis J., Linda Coates-Markle, Co-Investigators: N. Thompson Hobbs³, Bruce Lubow, Patrick McCue, Jay Kirkpatrick, E. Gus Cothran. 2002. Treatment of Wild Horse Mares with the Immunocontraceptive Porcine Zonae Pellucida Vaccine; Effects on Populations and Behavior. U.S. Department of Interior, Bureau of Land Management and Biological Resources Discipline of the U.S. Geological Survey, Natural Resource Ecology Laboratory of Colorado State University and Science and Conservation Center of Billings, Montana.

USDI Fish And Wildlife Service (USFWS) 2010. Ecological Services Colorado Field Offices. Colorado Field Office County List Updated July 2010 <http://www.fws.gov/mountain-prairie/endspp/CountyLists/Colorado.pdf>

10.0 Appendices

Appendix A. 2010 Standard Operating Procedures for Wild Horse Gathers

Gathers are conducted by utilizing contractors from the Wild Horse Gathers-Western States Contract or BLM personnel. The following procedures for gathering and handling wild horses apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse Aviation Management Handbook* (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads whenever possible.

The primary capture methods used in the performance of gather operations include:

1. Helicopter Drive Trapping. This capture method involves utilizing a helicopter to herd wild horses into a temporary trap.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary trap.

The following procedures and stipulations will be followed to ensure the welfare, safety and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700.

A. Capture Methods used in the Performance of Gather Contract Operations

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:
 - a. All trap and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move trap locations as determined by the COR/PI.
 - b. All traps and holding facilities not located on public land must have prior written approval of the landowner.

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors. Under normal circumstances this travel should not exceed 10 miles and may be much less dependent on existing conditions (i.e. ground conditions, animal health, extreme temperature (high and low)).
3. All traps, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
 - a. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for burros, and the bottom rail of which shall not be more than 12 inches from ground level. All traps and holding facilities shall be oval or round in design.
 - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2"x4".
 - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for burros, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet above ground level for burros and 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
 - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snowfence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses.
 - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.
4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.
5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, strays or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the

capture area(s). In areas requiring one or more satellite traps, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.

7. The Contractor shall provide animals held in the traps and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. The contractor will supply certified weed free hay if required by State, County, and Federal regulation. An animal that is held at a temporary holding facility through the night is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
8. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.
9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
10. Animals shall be transported to their final destination from temporary holding facilities as quickly as possible after capture unless prior approval is granted by the COR for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR. Animals shall not be held in traps and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR/PI or Field Office horse specialist.

B. Capture Methods That May Be Used in the Performance of a Gather

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary trap. If this capture method is selected, the following applies:
 - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
 - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.

- c. Traps shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:
 - a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.
 - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor, with the approval of the COR/PI, selects this method the following applies:
 - a. Under no circumstances shall animals be tied down for more than one hour.
 - b. The contractor shall assure that foals shall not be left behind, or orphaned.
 - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI, if requested, with a current safety inspection (less than one year old) for all motorized equipment and tractor trailers used to transport animals to final destination.
2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.
3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have at least two (2) partition gates providing at least three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing at least two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full

width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.

5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping as much as possible during transport.
6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:

11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
8 square feet per adult burro (1.0 linear foot in an 8 foot wide trailer);
6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
4 square feet per burro foal (.50 linear feet in an 8 foot wide trailer).

7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
 - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
 - b. The Contractor shall obtain the necessary FCC licenses for the radio system All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
2. Should the contractor choose to utilize a helicopter the following will apply:

- a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
- b. Fueling operations shall not take place within 1,000 feet of animals.

E. Site Clearances

No personnel working at gather sites may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resource located on public lands or Indian lands.

Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc). All proposed site(s) must be inspected by a government archaeologist.

Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees. Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.

F. Animal Characteristics and Behavior

Releases of wild horses would be near available water. If the area is new to them, a short-term adjustment period may be required while the wild horses become familiar with the new area.

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations will be made available to the extent possible; however, the primary considerations will be to protect the health, safety and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM representative. It is BLM policy that the public will not be allowed to come into direct contact with wild horses or burros being held in BLM facilities. Only authorized BLM personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at anytime or for any reason during BLM operations.

H. Responsibility and Lines of Communication

Contracting Officer's Representative/Project Inspector - Jim Dollerschell

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Assistant Field Manager, Tom Rice and Acting Field Manager, Connie Clementson, will take an active role to ensure the appropriate lines of communication are established between the field, Dolores Public Lands Office, Southwest Colorado District Office, Colorado State Office, National Program Office, and BLM Holding Facility offices at Canon City. All employees involved in the gathering operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Assistant Field Manager and the San Juan Public Lands Center Public Affairs. These individuals will be the primary contact and will coordinate with the COR/PI on any inquiries.

The COR will coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition. The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Should the Contractor show negligence and/or not perform according to contract stipulations, he will be issued written instructions, stop work orders, or defaulted.

I. Glossary

Appropriate Management Level - The number of adult wild horses and burro which can be sustained within a designated herd management area which achieves and maintains a thriving natural ecological balance keeping with the multiple-use management concept for the area.

Authorized Officer - An employee of the BLM, or their acting representative, to whom has been delegated the authority to perform the duties described in these Standard Operating Procedures. See BLM Manual 1203 for explanation of delegation of authority.

Census - The primary monitoring technique used to maintain a current inventory of wild horses and burros on given areas of the public lands. Census data are generally derived through direct visual counts of animals using a helicopter.

Contracting Officer (CO) - Is the individual responsible for an awarded contract who deals with claims, disputes, negotiations, modifications and payments. This position is represented by CORs and PIs.

Contacting Officers Representative (COR) - Acts as the technical representative for the CO on a contract. Ensures that all specifications and stipulations are met. Reviews the contractor's progress, advises the CO on progress, problems, costs, etc. Is responsible for review, approval, and acceptance of services.

Evaluation - A determination based on studies and other data that are available as to if habitat and population objectives are or are not being met and where an overpopulation of wild horses and burros exists and whether actions should be taken to remove excess animals.

Excess Wild Horses or Burros - Wild free-roaming horses or burros which have been removed from public lands or which must be removed to preserve and maintain a thriving ecological balance and multiple-use relationship.

Genetically Viable - Fitness of a population as represented by its ability to maintain the long-term reproductive capacity of healthy, genetically diverse members.

Health Assessment - Evaluation process based on best available studies data to determine the current condition of resources in relation to potential or desired conditions.

Healthy Resources - Resources that meet potential or desired conditions or are improving toward meeting those potential or desired conditions.

Herd Area - The geographical area identified as having been used by wild horse and burro populations in 1971, at the time of passage of the Wild Free-roaming Horse and Burro Act.

Herd Management Area - The geographical area as identified through the land use planning process established for the long-term management of wild horse and burro populations. The boundaries of the herd management area may not be greater than the area identified as having been used by wild horse and burro populations in 1971, at the time of passage of the Wild Free-roaming Horse and Burro Act.

Invasive Weeds - Introduced or noxious vegetative species which negatively impact the ecological balance of a geographical area and limit the areas potential to be utilized by authorized uses.

Metapopulation (complex) - A population of wild horses and burros comprised of two or more smaller, interrelated populations that are linked by movement or distribution within a defined geographical area.

Monitoring - Inventory of habitat and population data for wild horses and burros and associated resources and other authorized rangeland uses. The purpose of such inventories is to be used during evaluations to make determinations as to if habitat and population objectives are or are not being met and where an overpopulation of wild horses and burros exists and whether actions should be taken to remove excess animals.

Multiple Use Management - A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals watershed, domestic livestock, wild horses, wild burros, wildlife, and fish, along with natural, scenic, scientific, and historical values.

Project Inspector (PI) - Coordinates with the COR assigned to a contract to support his/her responsibility for review, approval, and acceptance of services. In this instance one individual will serve as both the COR and the PI.

Research - Science based inquiry, investigation or experimentation aimed at increasing knowledge about wild horses and burros conducted by accredited universities or federal government research organizations with the active participation of BLM wild horse and burro professionals.

Science Based Decision Making - Issuance of decisions affecting wild horses and burros, associated resources and other authorized rangeland uses incorporating best available habitat and population data and in consultation with the public.

Studies - Science based investigation of specific aspects of wild horse and burro habitat or populations in supplement to established monitoring. These investigations will not be established following rigid experimental protocols and could include drawing blood on animals to study genetics, disease and general health issues and population dynamics such as reproduction and mortality rates and general behavior.

Thriving Natural Ecological Balance - An ecological balance requires that wild horses and burros and other associated animals be in good health and reproducing at a rate that sustains the population, the key vegetative species are able to maintain their composition, production and reproduction, the soil resources are being protected, maintained or improved, and a sufficient amount of good quality water is available to the animals.

Appendix B. Standard Operating Procedures for Population-level Fertility Control Treatments

One-year liquid vaccine:

The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered through darting by trained BLM personnel or collaborating research partners only. For any darting operation, the designated personnel must have successfully completed a Nationally recognized wildlife darting course and who have documented and successful experience darting wildlife under field conditions.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA) and loaded into darts at the time a decision has been made to dart a specific mare. Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The liquid dose of PZP vaccine is administered using 1.0 cc Pneu-Darts with 1.5" barbless needles fired from either Dan Inject® or Pneu-Dart® capture gun.
4. Only designated darters would mix the vaccine/adjuvant and prepare the emulsion. Vaccine-adjuvant emulsion would be loaded into darts at the darting site and delivered by means of a capture gun.
5. Delivery of the vaccine would be by intramuscular injection into the left or right hip/gluteal muscles while the mare is standing still.
6. Safety for both humans and the horse is the foremost consideration in deciding to dart a mare. The Dan Inject® gun would not be used at ranges in excess of 30 m while the Pneu-Dart® capture gun would not be used over 50 m, and no attempt would be taken when other persons are within a 30-m radius of the target animal.
7. No attempts would be taken in high wind or when the horse is standing at an angle where the dart could miss the hip/gluteal region and hit the rib cage. The ideal is when the dart would strike the skin of the horse at a perfect 90° angle.
8. If a loaded dart is not used within two hours of the time of loading, the contents would be transferred to a new dart before attempting another horse. If the dart is not used before the end of the day, it would be stored under refrigeration and the contents transferred to another dart the next day. Refrigerated darts would not be used in the field.
9. No more than two people should be present at the time of a darting. The second person is responsible for locating fired darts. The second person should also be responsible for identifying the horse and keeping onlookers at a safe distance.
10. To the extent possible, all darting would be carried out in a discrete manner. However, if darting is to be done within view of non-participants or members of the public, an explanation of the nature of the project would be carried out either immediately before or after the darting.
11. Attempts will be made to recover all darts. To the extent possible, all darts which are discharged and drop from the horse at the darting site would be recovered before another darting occurs. In exceptional situations, the site of a lost dart may be noted and marked, and recovery efforts made at a later time. All discharged darts would be examined after recovery in order to determine if the charge fired and the plunger fully expelled the vaccine.
12. All mares targeted for treatment will be clearly identifiable through photographs to enable researchers and HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

13. Personnel conducting darting operations should be equipped with a two-way radio or cell phone to provide a communications link with the Project Veterinarian for advice and/or assistance. In the event of a veterinary emergency, darting personnel would immediately contact the Project Veterinarian, providing all available information concerning the nature and location of the incident.

14. In the event that a dart strikes a bone or imbeds in soft tissue and does not dislodge, the darter would follow the affected horse until the dart falls out or the horse can no longer be found. The darter would be responsible for daily observation of the horse until the situation is resolved.

22-month time-release pelleted vaccine: The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered only by trained BLM personnel or collaborating research partners.
2. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18-gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14-gauge needle. These are delivered using a modified syringe and jabstick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
3. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
4. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
5. All treated mares will be freeze-marked on the hip or neck HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

Monitoring and Tracking of Treatments:

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine HMA field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.

4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office, and State along with the freeze-mark(s) applied by HMA and date.

Appendix C. **Wild Horse Genetic Analysis of the Spring Creek Basin HMA**

Genetic Analysis of the
Spring Creek Basin HMA, CO

E. Gus Cothran

June 21, 2010

Department of Veterinary Integrative Bioscience
Texas A&M University
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The following is a report of the genetic analysis of the Spring Creek Basin HMA, CO.

A few general comments about the genetic variability analysis based upon DNA microsatellites compared to blood typing. The DNA systems are more variable than blood typing systems, thus variation levels will be higher. Variation at microsatellite loci is strongly influenced by allelic diversity and changes in variation will be seen in allelic measures more quickly than at heterozygosity, which is why more allelic diversity measures are calculated. For mean values, there are a greater proportion of rare domestic breeds included in the estimates than for blood typing so relative values for the measures are lower compared to the feral horse values. As well, feral values are relatively higher because the majority of herds tested are of mixed ancestry which results in a relatively greater increase in heterozygosity values based upon the microsatellite data. There are no specific variants related to breed type so similarity is based upon the total data set.

METHODS

A total of 15 samples were received by Texas A&M University, Equine Genetics Lab on August 29, 2007. This herd was previously sampled and tested in 2000. DNA was extracted from the samples and tested for variation at 12 equine microsatellite (mSat) systems. These were *AHT4*, *AHT5*, *ASB2*, *ASB17*, *ASB23*, *HMS3*, *HMS6*, *HMS7*, *HTG4*, *HTG10*, *LEX33*, and *VHL20*. These systems were tested using an automated DNA sequencer to separate Polymerase Chain Reaction (PCR) products.

A variety of genetic variability measures were calculated from the gene marker data. The measures were observed heterozygosity (H_o) which is the actual number of loci heterozygous per individual; expected heterozygosity (H_e), which is the predicted number of heterozygous loci based upon gene frequencies; effective number of alleles (A_e) which is a measure of marker system diversity; total number of variants (TNV); mean number of alleles per locus (MNA); the number of rare alleles observed which are alleles that occur with a frequency of 0.05 or less (RA); the percent of rare alleles ($\%RA$); and estimated inbreeding level (F_{is}) which is calculated as $1-H_o/H_e$.

Genetic markers also can provide information about ancestry in some cases. Genetic resemblance to domestic horse breeds was calculated using Rogers' genetic similarity coefficient, S . This resemblance was summarized by use of a restricted maximum likelihood (RML) procedure.

RESULTS AND DISCUSSION

Variants present and allele frequencies are given in Table 1. No variants were observed which have not been seen in horse breeds. Table 2 gives the values for the genetic variability measures of the Spring Creek Basin HMA herd from both 2000 and 2007. Also shown in Table 2 are values from a representative group of domestic horse breeds. The breeds were selected to cover the range of variability measures in domestic horse populations. Mean values for feral herds (based upon data from 126 herds) and mean values for domestic breeds (based upon 80 domestic horse populations) also are shown.

Mean genetic similarity of the Spring Creek Basin HMA herd to domestic horse breed types are shown in Table 3. A dendrogram of relationship of the Spring Creek Basin HMA herd to a standard set of domestic breeds is shown in Figure 1.

Genetic Variants: A total of 61 variants were seen in the Spring Creek Basin HMA herd in the 2007 sample, however, 75 were found in 2000. This difference is probably due to the low sample size for 2007. This would place the herd near the feral average. Actual allelic diversity as represented by *A_e* is higher in 2007 than 2000 but both values are below the mean. The proportion of variants at risk of loss in 2000 was fairly high but much lower in 2007. Again this is directly due to the small sample size for 2007.

Genetic Variation: Genetic variation, as indicated by heterozygosity, in the Spring Creek Basin HMA herd is well below the feral mean for both years. *H_o* for the 2000 sample is below the critical value however, for the 2007 sample it is slightly above the critical [*critical*] level. *H_o* is higher in 2007 than 2000 [2000? *B_{Ball}*] which is likely due to the relatively higher allelic diversity as shown by *A_e*. *H_o* is lower than *H_e* in both years and likely reflect some inbreeding, considering the other diversity measures.

Genetic Similarity: Overall similarity of the Spring Creek Basin HMA herd to domestic breeds was about average for feral herds. Highest mean genetic similarity of the Spring Creek Basin HMA herd was with Light Racing and Riding breeds, followed very closely by the North American Gaited breeds. This is very consistent with blood typing results from 2000. However, as seen in Fig. 1, the Spring Creek Basin HMA herd fits most closely to the Chilean Criollo and other South American Criollo horses. This could be due to the small sample size. Overall, the combined data indicate the herd likely derives from riding breeds of North American origin. Compared to other Colorado herds, the Spring Creek Basin herd is most like the Little Bookcliffs population.

SUMMARY

Genetic variability of this herd is low. The values related to allelic diversity are near the average while heterozygosity but it is difficult to determine whether the current population has lost diversity compared to 2000 because of sample size. It is likely that a reduction in variation has occurred due to the low population size after the 2000 gather. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American.

RECOMMENDATIONS

This herd should be monitored closely. Current heterozygosity levels are near the critical low value and there is a suggestion of inbreeding. The AML for this herd is small so a continued loss of diversity is probable. Introduction of one or two young [*young*] mares from a nearby HMA could restore variability without having a major impact on the genetic character of the herd or population size.

Table 1. Allele frequencies of genetic variants observed in Spring Creek Basin HMA feral horse herd.

VHL20

I	J	K	L	M	N	O	P	Q	R	S
0.167	0.000	0.000	0.033	0.267	0.300	0.000	0.033	0.000	0.200	0.000

HTG4

I	J	K	L	M	N	O	P	Q	R
0.000	0.000	0.200	0.367	0.133	0.000	0.233	0.067	0.000	0.000

AHT4

H	I	J	K	L	M	N	O	P	Q	R
0.000	0.000	0.100	0.033	0.000	0.433	0.000	0.433	0.000	0.000	0.000

HMS7

I	J	K	L	M	N	O	P	Q	R
0.000	0.133	0.000	0.233	0.333	0.100	0.133	0.000	0.067	0.000

AHT5

I	J	K	L	M	N	O	P	Q	R
0.000	0.500	0.067	0.000	0.167	0.200	0.067	0.000	0.000	0.000

HMS6

I	J	K	L	M	N	O	P	Q	R
0.000	0.000	0.000	0.133	0.133	0.000	0.200	0.533	0.000	0.000

ASB2

B	I	J	K	L	M	N	O	P	Q	R
0.000	0.033	0.000	0.367	0.000	0.100	0.433	0.067	0.000	0.000	0.000

HTG10

H	I	J	K	L	M	N	O	P	Q	R	S	T
0.000	0.433	0.000	0.000	0.067	0.233	0.000	0.000	0.000	0.000	0.267	0.000	0.000

HMS3

H	I	J	K	L	M	N	O	P	Q	R	S
0.000	0.067	0.000	0.000	0.000	0.500	0.167	0.000	0.167	0.100	0.000	0.000

ASB17

D	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
0.000	0.100	0.133	0.000	0.167	0.000	0.000	0.000	0.067	0.000	0.167	0.000	0.000	0.367	0.000	0.000

ASB23

G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
0.033	0.000	0.267	0.067	0.467	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.000

LEX33

F	G	K	L	M	N	O	P	Q	R	S	T
0.000	0.000	0.067	0.367	0.167	0.000	0.367	0.000	0.000	0.000	0.000	0.033

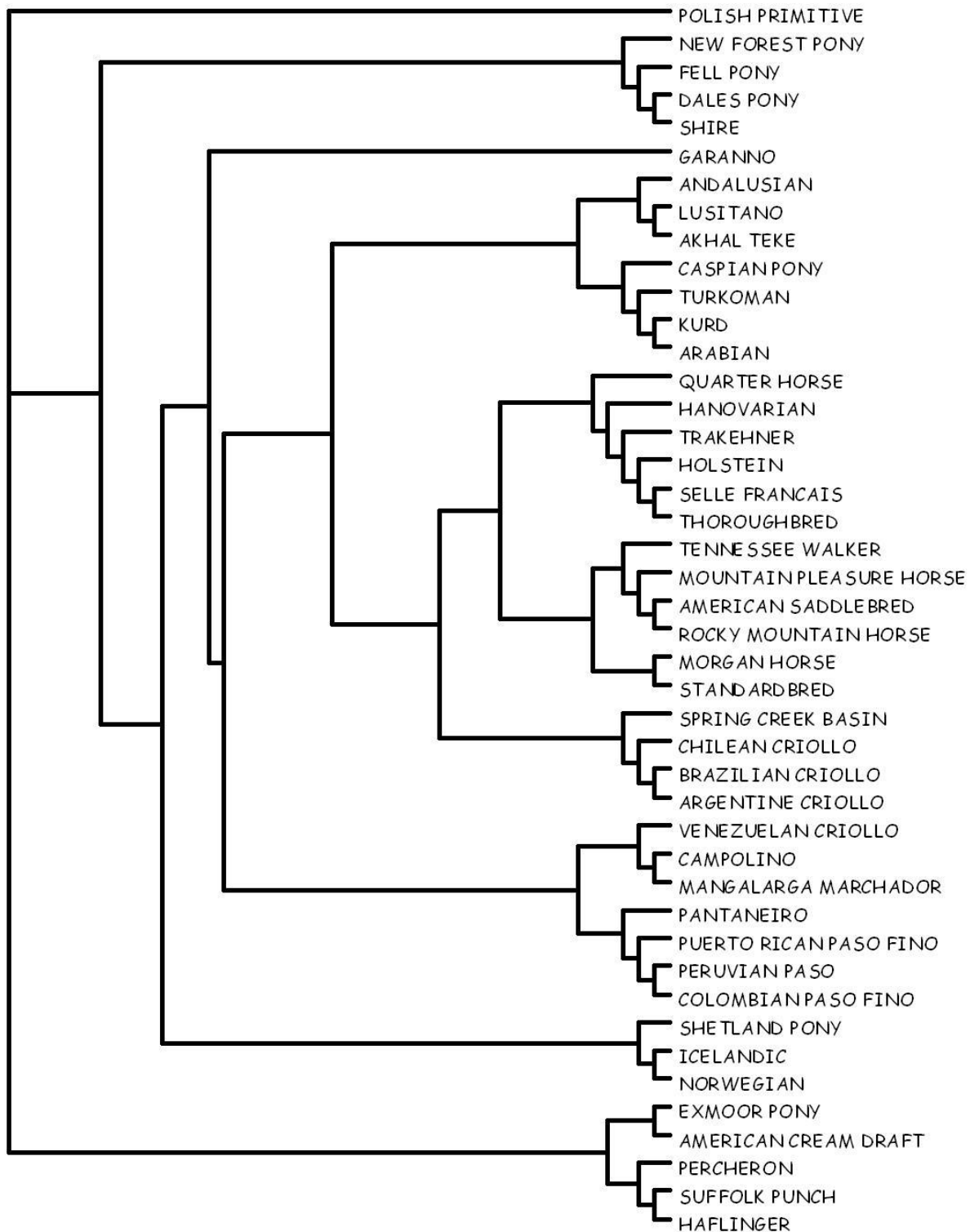
Table 2. Genetic variability measures.

	<i>N</i>	<i>Ho</i>	<i>He</i>	<i>Fis</i>	<i>Ae</i>	<i>TNV</i>	<i>MNA</i>	<i>Ra</i>	<i>%Ra</i>
SPRING CREEK BASIN 2007	15	0.689	0.702	0.018	3.47	61	5.08	6	0.098
SPRING CREEK BASIN 2000	72	0.641	0.678	0.054	3.24	75	6.25	24	0.320
Cleveland Bay	47	0.610	0.627	0.027	2.934	59	4.92	16	0.271
American Saddlebred	576	0.740	0.745	0.007	4.25	102	8.50	42	0.412
Andalusian	52	0.722	0.753	0.041	4.259	79	6.58	21	0.266
Arabian	47	0.660	0.727	0.092	3.814	86	7.17	30	0.349
Exmoor Pony	98	0.535	0.627	0.146	2.871	66	5.50	21	0.318
Friesian	304	0.545	0.539	-0.011	2.561	70	5.83	28	0.400
Irish Draught	135	0.802	0.799	-0.003	5.194	102	8.50	28	0.275
Morgan Horse	64	0.715	0.746	0.041	4.192	92	7.67	33	0.359
Suffolk Punch	57	0.683	0.711	0.038	3.878	71	5.92	13	0.183
Tennessee Walker	60	0.666	0.693	0.038	3.662	87	7.25	34	0.391
Thoroughbred	1195	0.734	0.726	-0.011	3.918	69	5.75	18	0.261
Feral Horse Mean	126	0.716	0.710	-0.012	3.866	72.68	6.06	16.96	0.222
Standard Deviation		0.056	0.059	0.071	0.657	13.02	1.09	7.98	0.088
Minimum		0.496	0.489	-0.284	2.148	37	3.08	0	0
Maximum		0.815	0.798	0.133	5.253	96	8.00	33	0.400
Domestic Horse Mean	80	0.710	0.720	0.012	4.012	80.88	6.74	23.79	0.283
Standard Deviation		0.078	0.071	0.086	0.735	16.79	1.40	10.11	0.082
Minimum		0.347	0.394	-0.312	1.779	26	2.17	0	0
Maximum		0.822	0.799	0.211	5.30	119	9.92	55	0.462

Table 3. Rogers' genetic similarity of the Spring Creek Basin HMA feral horse herd to major groups of domestic horses.

	Mean <i>S</i>	Std	Minimum	Maximum
Light Racing and Riding Breeds	0.716	0.009	0.706	0.728
Oriental and Arabian Breeds	0.691	0.043	0.618	0.736
Old World Iberian Breeds	0.700	0.017	0.684	0.729
New World Iberian Breeds	0.699	0.018	0.684	0.737
North American Gaited Breeds	0.714	0.018	0.688	0.731
Heavy Draft Breeds	0.651	0.040	0.610	0.727
True Pony Breeds	0.650	0.039	0.599	0.692

Figure 1. Partial RML tree of genetic similarity to domestic horse breeds.



Appendix 1. DNA data for the Spring Creek Basin HMA, CO herd.

AID	AHT4	AHT5	ASB17	ASB2	ASB23	HMS3	HMS6	HMS7	HTG10	HTG4	LEX3	LEX33	VHL20
17032	MO	JM	II	KN	IK	MQ	MP	MM	IR	LO	MN	LT	IM
17033	MM	JJ	FR	KM	IK	NP	PP	JQ	IM	MP	MM	LM	IM
17034	MO	JN	RR	KN	KK	MN	PP	MM	MR	LL	KK	MO	NN
17035	JO	MO	OO	NN	IK	IM	LL	OO	II	OO	HL	LL	RR
17036	MO	JK	IR	KN	GL	IP	LP	NN	IR	KK	NN	MO	NN
17037	MO	JM	IO	KK	IJ	MM	OP	LM	II	KL	NN	LO	MR
17038	MM	JN	MR	KK	IK	NQ	PP	JM	MR	LM	KN	LM	IN
17039	KM	MO	GG	NN	IK	MP	OP	LL	IR	LO	NN	OO	MM
17040	MO	JK	FO	MO	IK	MP	MP	JQ	MR	KP	KM	LO	MN
17041	JM	JM	IO	KN	IK	MM	LO	OO	II	LO	LM	LO	NR
17042	OO	JJ	RR	MN	LS	MM	PP	LN	MM	LM	NN	LO	PR
17043	JO	JN	FG	IN	KK	MN	MP	LL	LL	KL	MM	KL	LN
17044	OO	NN	GR	KN	JS	MP	OO	LM	IR	KL	LL	KO	IR
17045	MO	JN	RR	NO	KK	MM	MP	MM	IR	OO	KK	OO	MM
17046	MO	JJ	MR	KN	KL	NQ	OP	JM	IM	LM	NN	LM	IN

Appendix D. **Sample Closure Order Bureau of Land Management Dolores Public Land Office**

Pursuant to Title 43 of the Code of Federal Regulations (CFR) 9268.3 (d), the following closure order is in effect throughout all Bureau of Land Management lands in the Spring Creek Basin Wild Horse Herd Management Area, from Monday September 12, 2011 through Friday September 23, 2011.

During this five day period public use or travel across any part of the Spring Creek Basin Herd Management Area is prohibited. The closure is necessary to prevent interference with wild horse gather operations scheduled during the aforementioned dates.

The following are exempt from the provisions of this order:

1. Any Federal, State, or local law enforcement officer, or member of an organized rescue or firefighting force in the performance of an official duty. Bureau of Land Management (BLM) employees, volunteers or contractors in the performance of their official duties.
2. Persons with a permit specifically authorizing entrance into the closure area or those accompanied by a BLM representative and following their instructions.

The Spring Creek Basin Herd Management Area is located in San Miguel and Dolores Counties, Colorado. The Legal description includes BLM administered lands in T.42 & 43N., R.14 & 15W., N.M.P.M. A map of the Herd Management Area is reproduced on the back of this Closure Order.

Done at Dolores, Colorado, this ____ day of ____, 2011.

Connie Clementson
Acting Field Office Manager
Dolores Public Land Office

Violations of Title 43 CFR 9268.3 prohibitions are punishable as a Class A misdemeanor by a fine of not more than \$100,000 for an individual or \$200,000 for an organization and /or up to 12 months imprisonment.

Appendix E. **WinEquus (Stephen Jenkins) Population Modeling for Spring Creek Basin HMA** *Population Model Overview*

Population modeling is a tool designed to help evaluate various management alternatives and possible outcomes for management different species. The WinEquus modeling program was developed by Dr. Stephen H. Jenkins at the University of Nevada at Reno to assist wild horse and burro specialists in evaluating various management alternatives that might be considered for a particular area.

The model uses data on average survival probabilities and foaling rates of horses to simulate population growth over a period of years. The model accounts for year-to-year variation in these demographic parameters by using a randomization process to select survival probabilities and foaling rates for each age class from a distribution of values based on these averages. This aspect of population dynamics is called environmental stochasticity, and reflects the fact that future environmental conditions that may affect horse populations cannot be known in advance. Therefore, each trial with the model will give a different pattern of population growth. Some trials may include mostly “good years”, when the population grows rapidly; other trials may include a series of several “bad” years in succession. The stochastic approach to population modeling uses repeated trials to project a range of possible population trajectories over a period of years, which is more realistic than predicting a single specific trajectory.

The Dolores Public Land Office of the BLM used the model to simulate selective removal of excess horses with application of the one-year PZP (Proposed Action), no removal (No Action), and selective removal with the 22-month PZP fertility control treatment (Immunocontraception Alternative) as management strategies. Initial population age structures were developed for the HMA based on the 2007gather/release demographics and the model used on the ground counts by volunteers from May 2011. All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Garfield Flat HMA. Survival data was collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999. Marked individuals were followed for a total of 708 animal-years to generate these survival probabilities.

Foaling rate data was collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999. Marked females were followed for a total of 351 animal-years to generate these data on foaling rates. These initial populations for the Spring Creek Basin HMA were entered into the model and put through simulations that included selective removal with application of the one-year PZP (the Proposed Action), selective removal with application of the 22-month PZP fertility control (Alternative 2) or no removal or contraception (No Action Alternative). The simulations were run for 100 trials over the next eleven years. For each simulation, a series of graphs and tables were provided which included the “most typical” trial, population sizes, growth rates, and gather numbers.

a. Results of Population Modeling

Out of the 100 trials in each simulation run, the model tabulated minimum, average, and maximum population sizes. The model was run for a period of eleven years from 2011 to 2021, and gives output through 2021. These numbers are useful to make relative comparisons of the different alternatives, and potential outcomes under different management options. The lowest, median and highest trials are displayed for each simulation completed. This output shows not only expected average results but also extreme results that might be possible. The minimum population size in general reflects the numbers that would remain following management or random environmental impacts. The maximum population size generally reflects the population that existed prior to the gather, and in many cases that figure would not be exceeded during the

ten years of the simulations. Half of the trials were greater than the median and half of them less than the median.

Table E-1 Population Size – Selective Removal and PZP Fertility Control- Proposed Action

Estimated Population Sizes in 11 Years	
Trial	Average
Lowest	57
Median	131
Highest	291

Table E-2. Population Size – Selective Removal and PZP22 Fertility Control Alternative

Estimated Population Sizes in 11 Years	
Trial	Average
Lowest	85
Median	188
Highest	374

Table E-3. Population Size – No Action Alternative

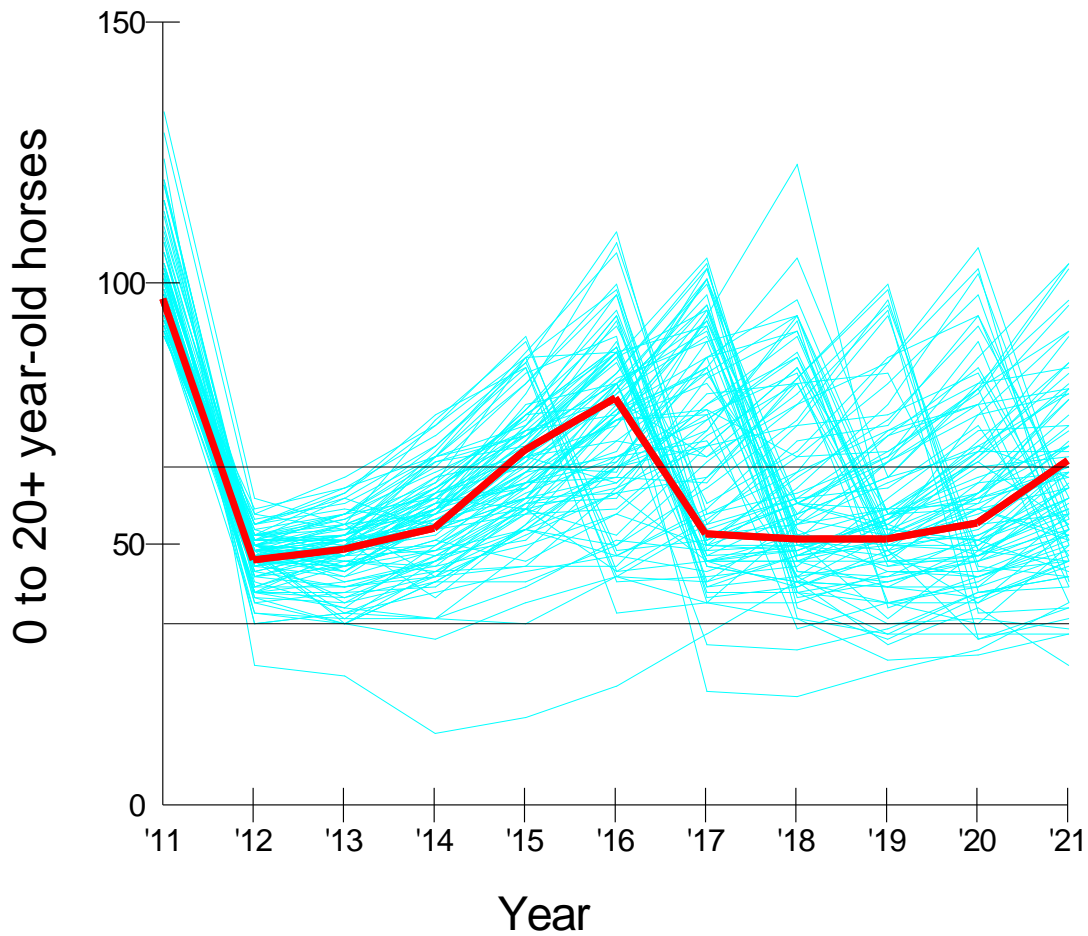
Estimated Population Sizes in 11 Years	
Trial	Average
Lowest	291
Median	507
Highest	805

Time Series Graph of Most Typical Trial

Based on the results from the model, spaghetti graphs (see below) were generated for each simulation. These graphs show how population size changes over time. The Y-axis scale remains constant for each graph; however the X-axis was determined based on results and was unable to be changed. At first glance, there appears to be not much difference between the trials, but if the reader takes a closer look one finds the scales to be different. Each line represents one of the 100 trials for the simulations completed for each alternative. The two horizontal lines located in the graphs represent the threshold for gather (upper range of AML) and the target population size (low range of AML). The Most Typical Trial graph includes a dark heavy line (red) which represents what the model has chosen as the trial with the most typical results. This trial closely matches the average of all 100 trials. The most typical trial is useful for making comparisons between alternatives, and for predicting what would be the probable results of the action.

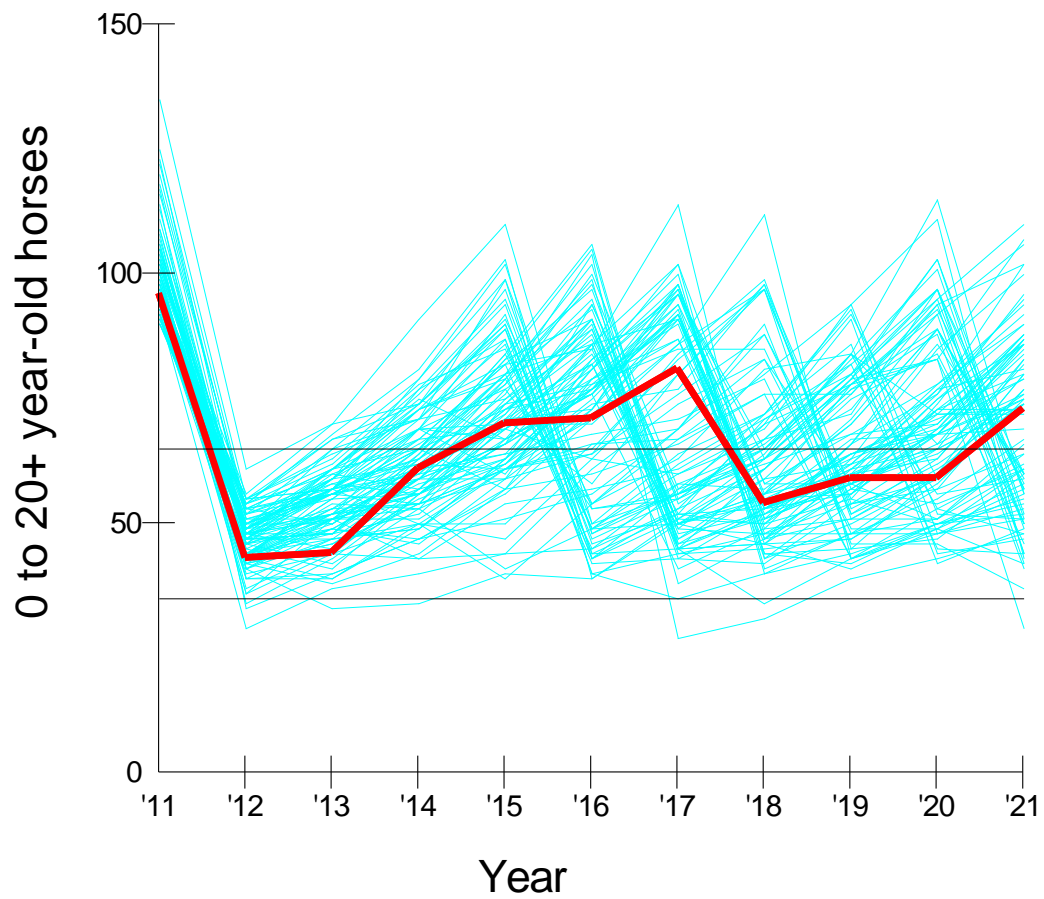
Population Size Graph of Most Typical Trial
Proposed Action Alternative

Most Typical Trial



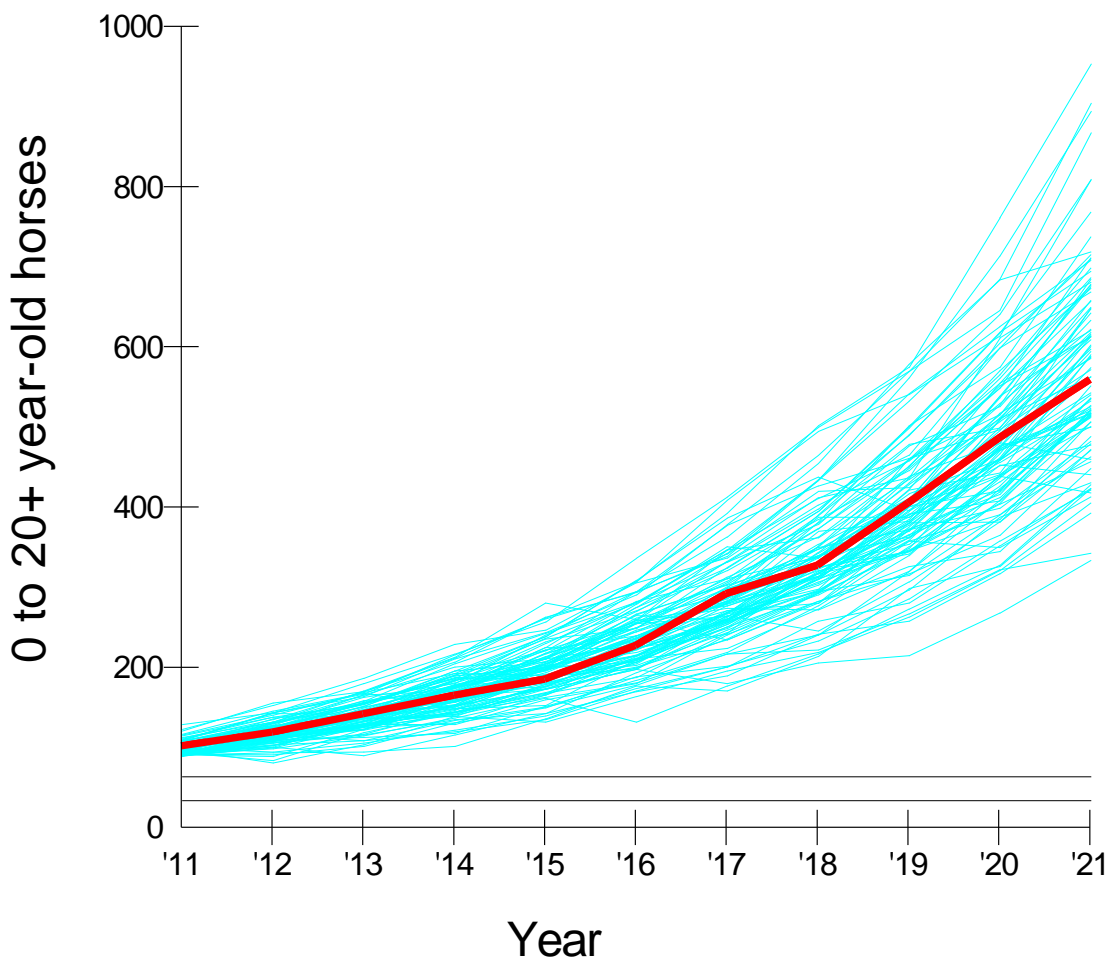
Population Size Graph of Most Typical Trial
Alternative 2

Most Typical Trial



Population Size Graph of Most Typical Trial
No Action

Most Typical Trial



b. Growth Rates

Through the model, average population growth rates were obtained for the Proposed Action (selective removal), the Fertility Control Alternative (fertility control and selective removal) and the No Action Alternative. Growth rates are displayed for the lowest, median and highest trial, under each alternative.

Table E-4. Spring Creek Basin HMA - Percent Average Growth Rates in 10 years, 2007 Gather

Trial	Proposed Action: Selective Removal with One Year PZP Fertility Control	Alternative: Selective Removal & PZP22 Fertility Control	No Action Alternative
Lowest	5.0%	9.3%	12.5%
Median	14.2%	18.3%	18.9%
Highest	23.6%	26.7%	24.5%

Population modeling reflects that the implementation of fertility control and selective removal would result in slightly reduced growth rates of the wild horse population in the Spring Creek Basin HMA, when compared to selective removal alone. The model indicates that growth rates would not be so low as to cause risk to the population should fertility control be implemented. The No Action Alternative shows the continued increase in population size if a gather was not completed.

c. Population Modeling Summary

To summarize the results obtained by simulating the range of alternatives for the Spring Creek Basin HMA wild horse gather, the following questions can be addressed.

- *Do any of the Alternatives “crash” the population?*
None of the alternatives indicate that a crash is likely to occur to the population. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.
- *What effect does fertility control have on population growth rate?*
The alternatives implementing fertility control reflects slightly lower overall growth rates. The difference in the growth rates for selective removal with fertility control using PZP, compared to selective removal with PZP22 fertility control are relatively small.
- *What effect do the different alternatives have on the average population size?*
The population sizes obtained through the model indicate that fertility control implementation with PZP one year compared to PZP22 are similar. Growth rates simulated for the PZP22 fertility control alternative were 3-4% higher than with the PZP proposed action.

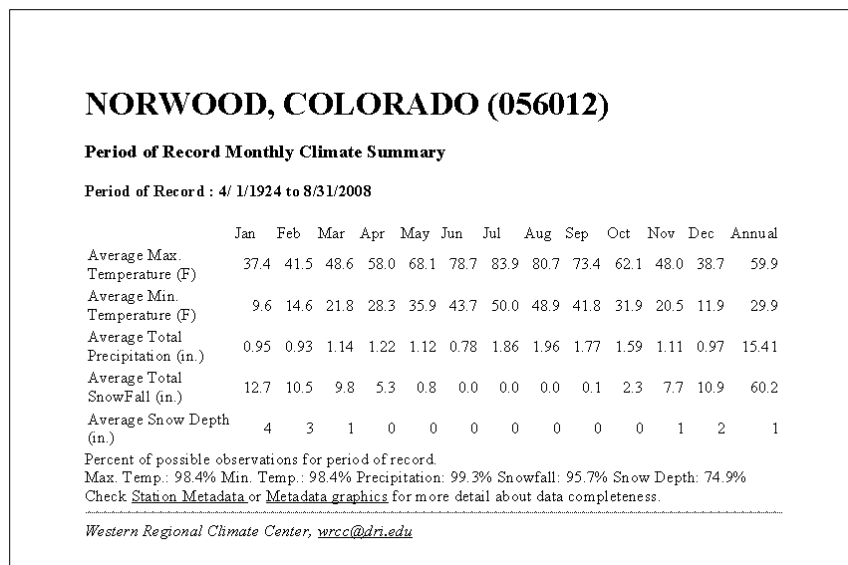
The No Action Alternative is clearly unacceptable, but it was analyzed for comparison with the other alternatives. Without a wild horse gather, the population would quickly exceed the carrying capacity of the HMA, with attendant long term habitat damage, substantially reducing the ability of the HMA to support horses.

Appendix F. Resource Monitoring; Rangeland Health Assessment Attribute Ratings and Vegetation Condition Ratings; Special Status Species lists

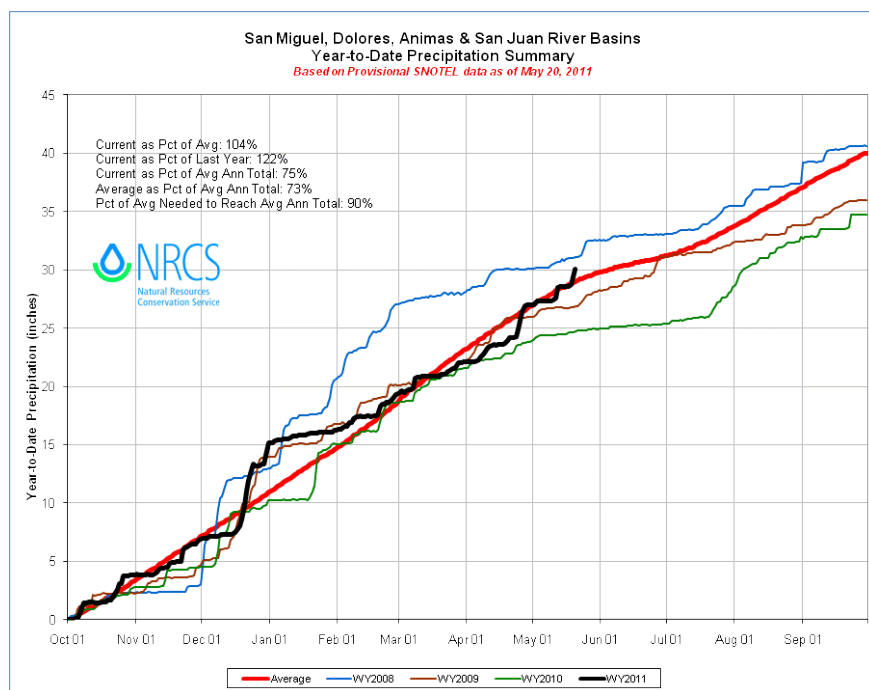
Resource Monitoring

Climate

Average precipitation at Norwood Colorado 1924-2008

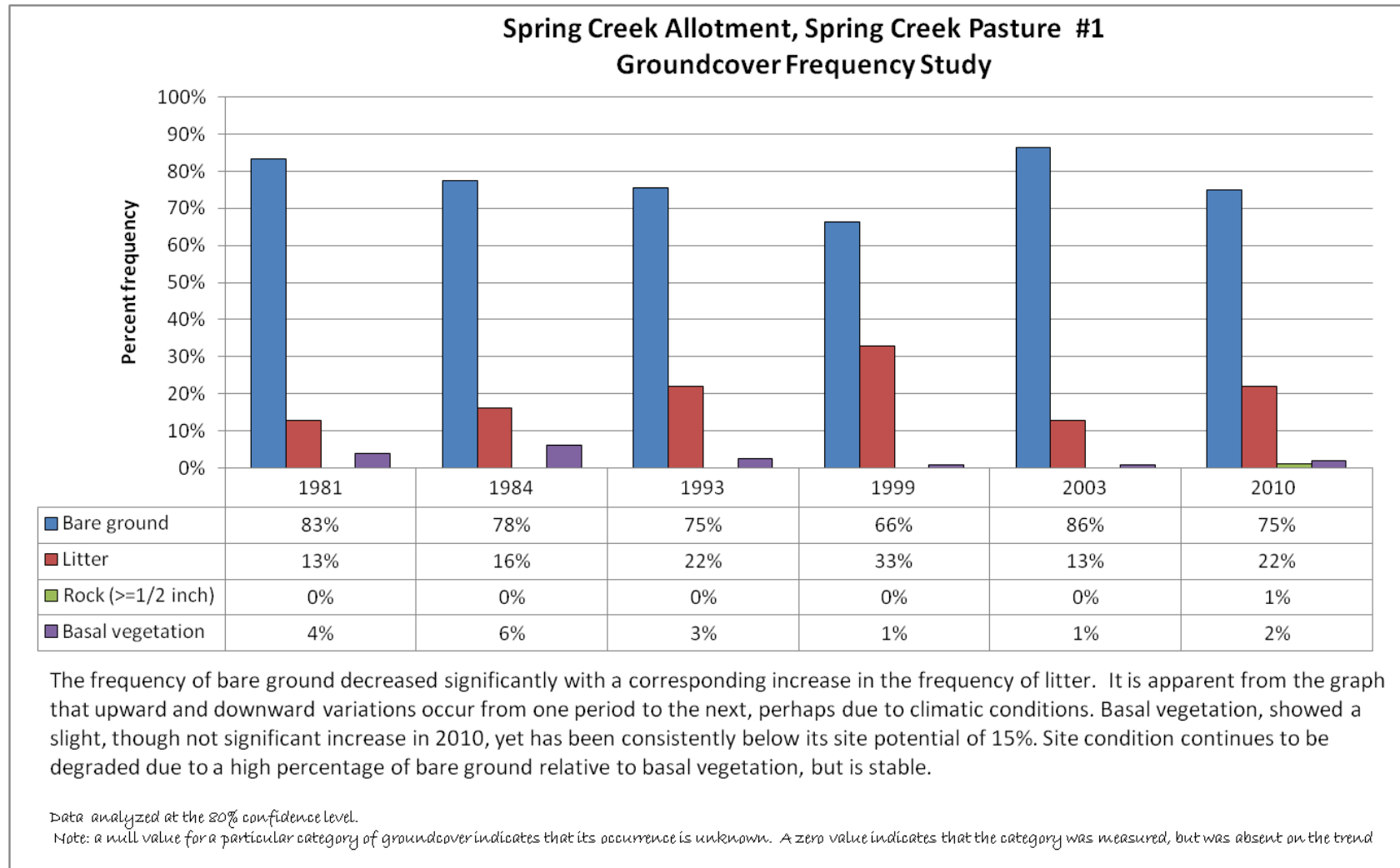


Year to Date Precipitation Summary from Natural Resources Conservation Service

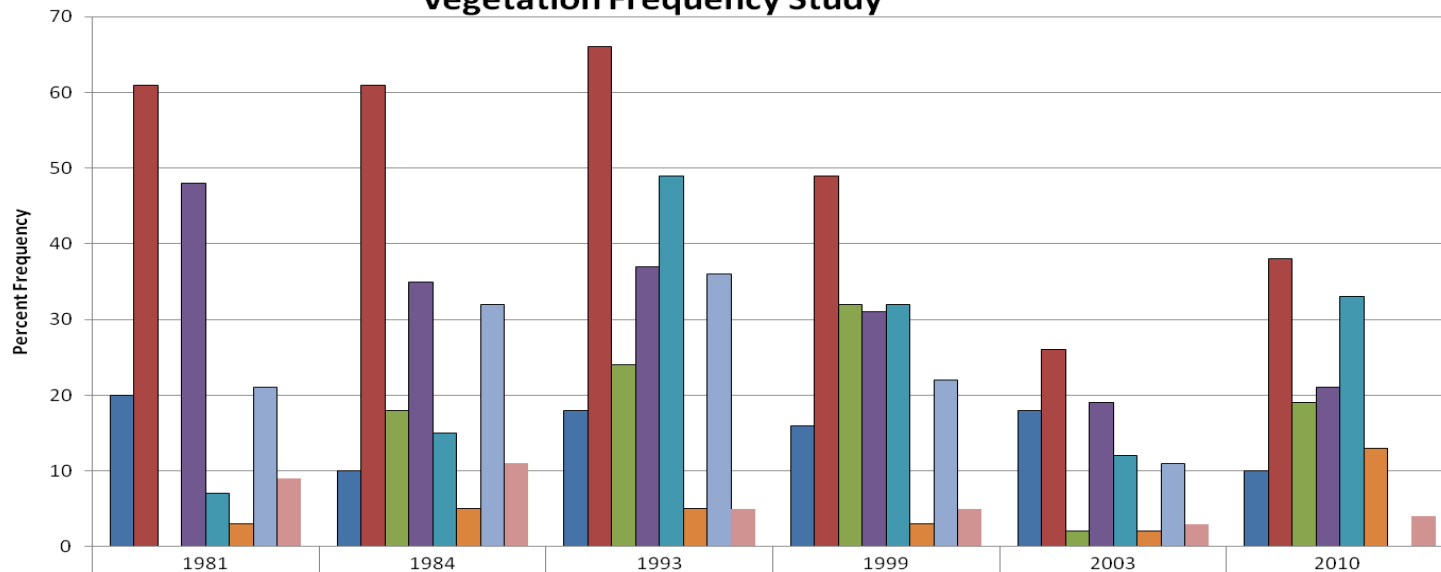


Nested Frequency Transects

Spring Creek Pasture #1



Spring Creek Allotment, Spring Creek Pasture #1, Vegetation Frequency Study



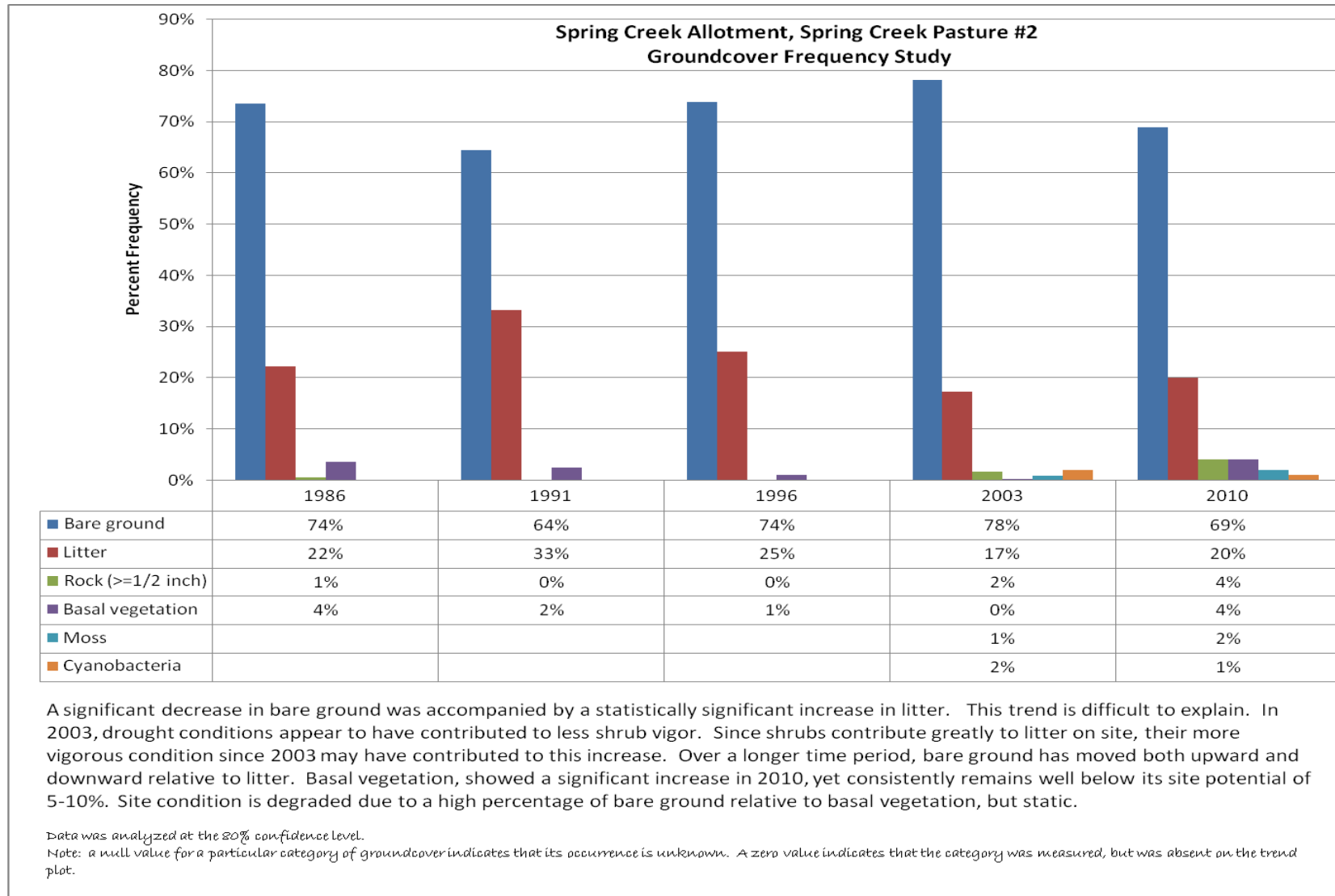
■ Galleta	20	10	18	16	18	10
■ Indian ricegrass	61	61	66	49	26	38
■ Bottlebrush squirreltail		18	24	32	2	19
■ Shadscale	48	35	37	31	19	21
■ Green Rabbitbrush	7	15	49	32	12	33
■ Winterfat	3	5	5	3	2	13
■ Bud sage	21	32	36	22	11	0
■ Mat saltbush	9	11	5	5	3	4

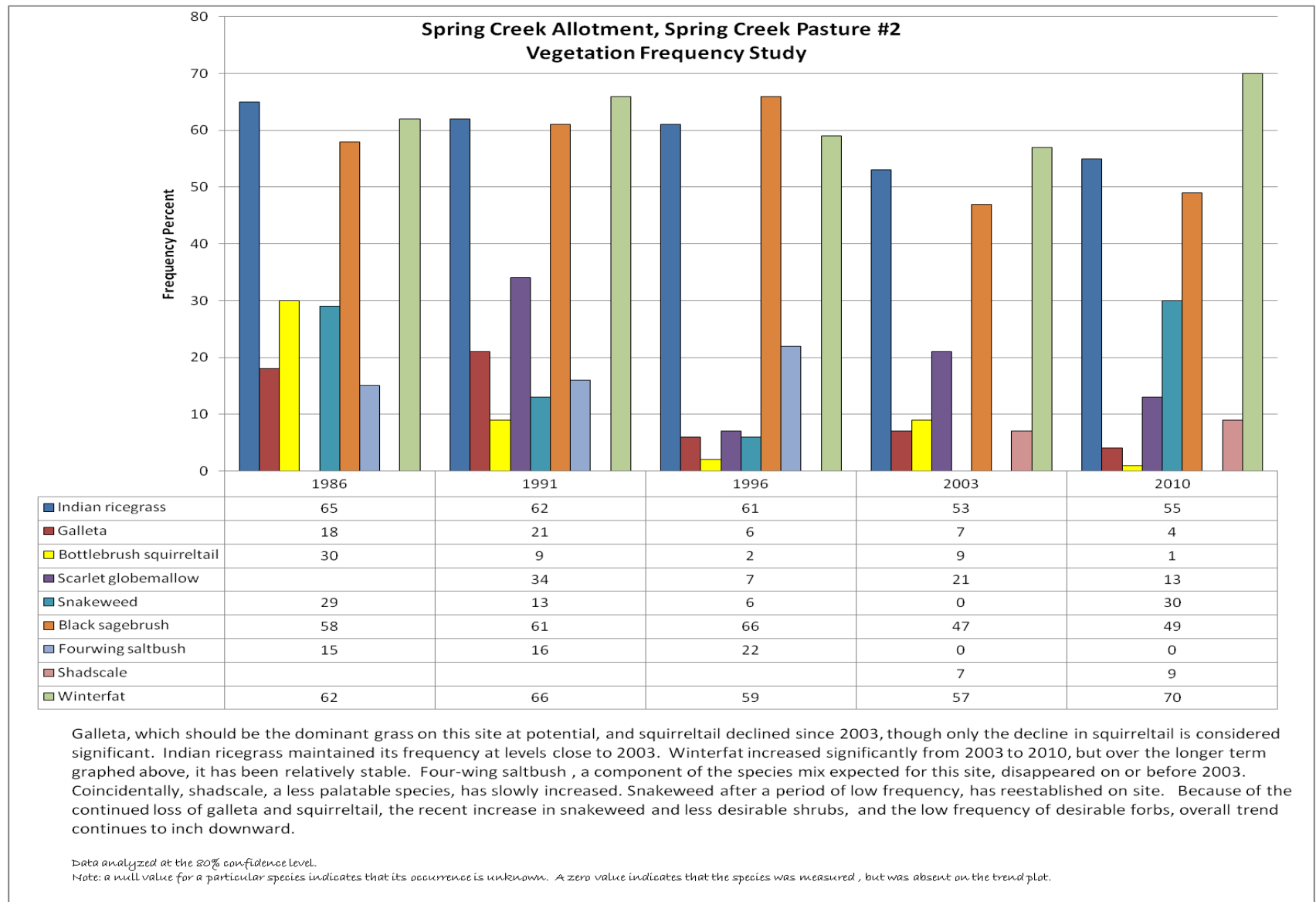
Squirreltail and Indian ricegrass increased significantly from 2003 to 2010, though not to levels seen in the early '80's and '90's. However, galleta declined, though not significantly. It appears this species had rebounded in 2003 from a similarly low frequency in 1984. Galleta is considered less palatable to livestock. Bud sage disappeared from the site in 2010, perhaps due to drought condition noted in 2003. Horsebrush, which is not palatable to horses or cattle, reappeared after an absence in '03. Two weedy species, halogeton and hornhead were noted on 37% and 15% of the plot frames, respectively. On the positive side, winterfat increased significantly. Other shrub species (rabbitbrush, shadscale, mat saltbush) all saw some, though not necessarily significant, increases after recorded declines in 2003. The increase of cool-season grasses and the important forage species, winterfat, is encouraging. On the other hand, galleta should be the dominant grass species on this site at potential. Its frequency is extremely low. Weedy species like halogeton have impacted the site. Budsage is perhaps gone. Overall, trend is mixed.

Data analyzed at the 80% confidence level.

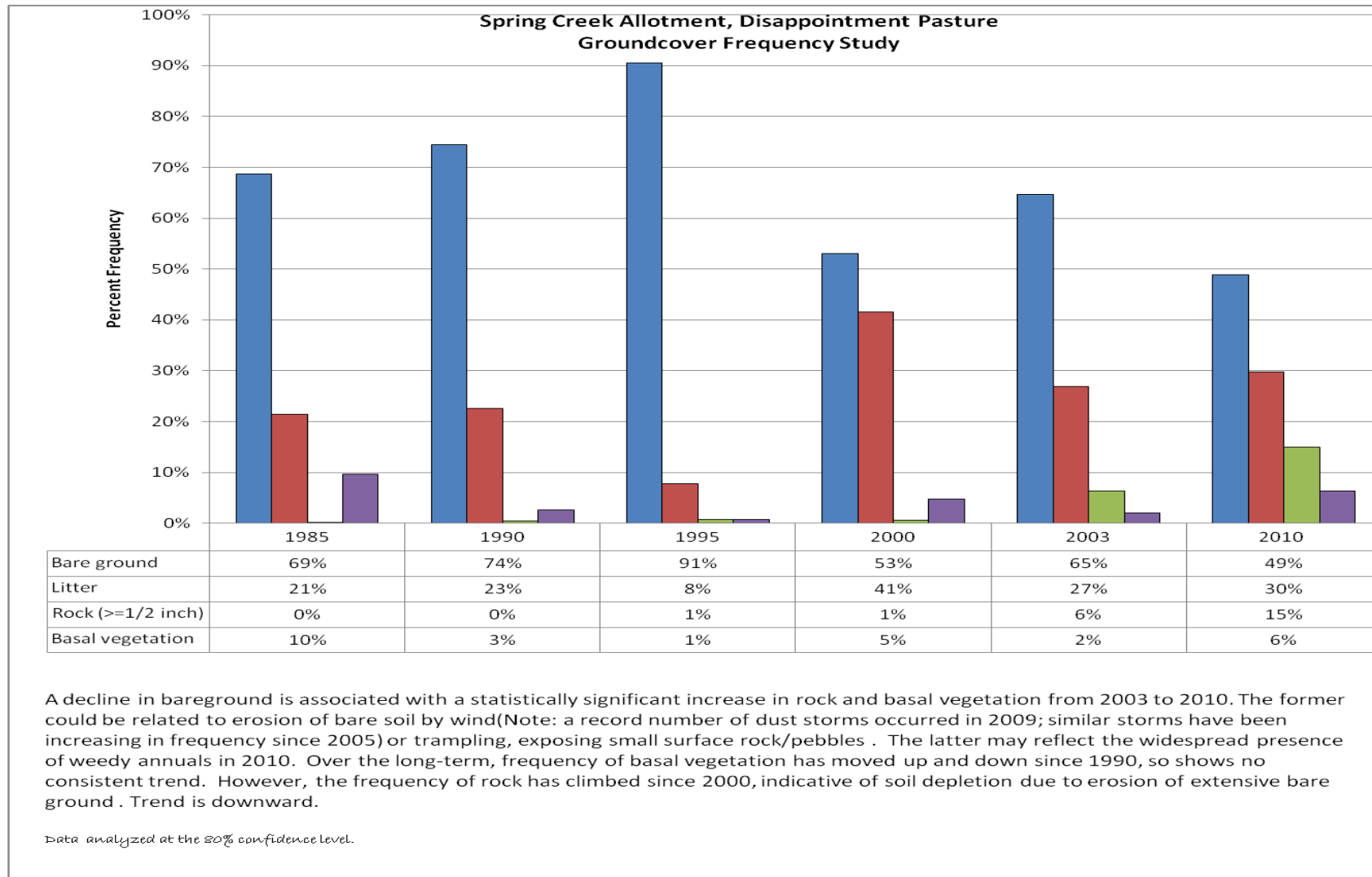
Note: a null value for a particular species indicates that its occurrence is unknown. A zero value indicates that the species was measured, but was absent on the trend plot.

Spring Creek Pasture #2

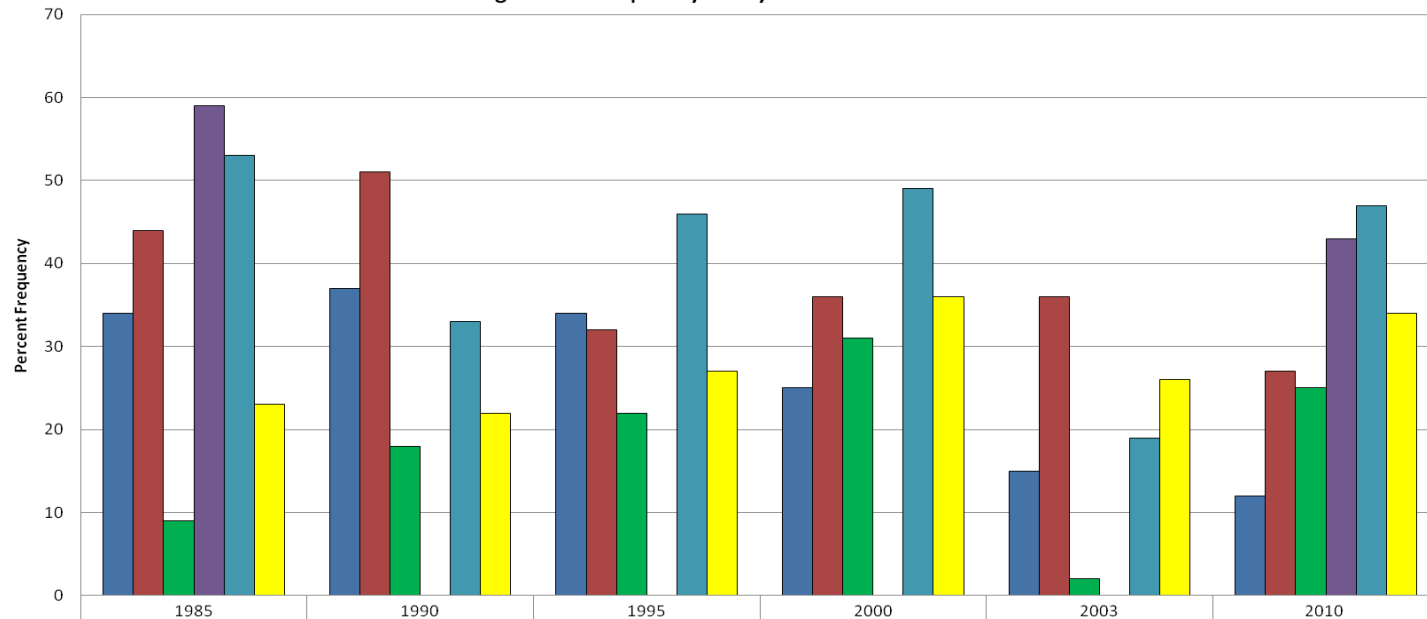




Spring Creek Disappointment Pasture;



**Spring Creek Allotment, Disappointment Pasture
Vegetation Frequency Study**



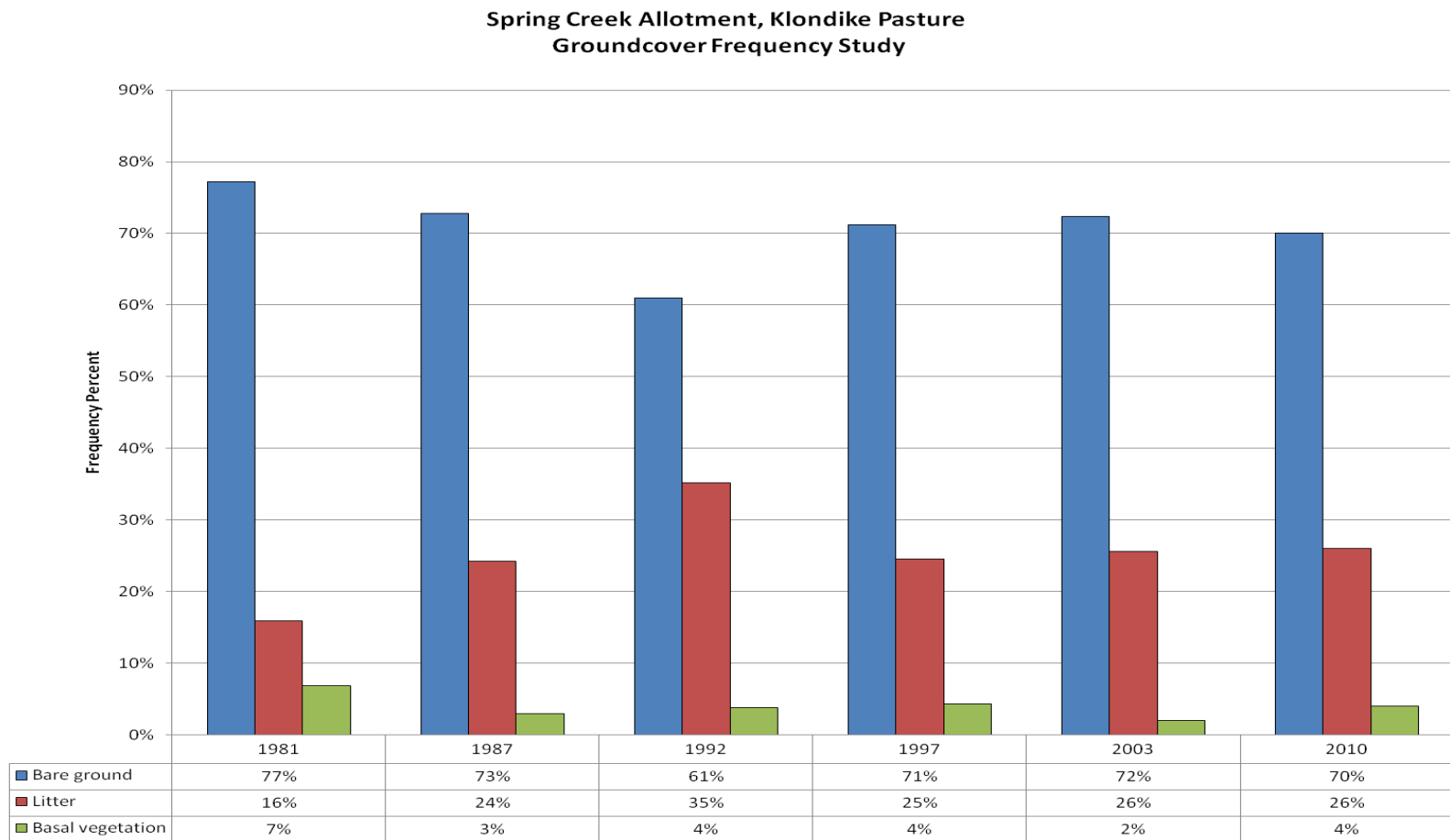
Indian ricegrass 12"	34	37	34	25	15	12
Galleta 6"	44	51	32	36	36	27
Bottlebrush squirreltail 24"	9	18	22	31	2	25
Cheatgrass 12"	59				0	43
Scarlet globemallow 24"	53	33	46	49	19	47
Shadscale 24"	23	22	27	36	26	34

In 2003, the range health assessment for the Disappointment Pasture described trend as downward . In the short term, looking at cool-season grasses, it is encouraging that squirreltail frequency has rebounded . However, the frequency of Indian ricegrass declined. Although not statistically significant in the short-term , it follows a statistically significant downward trend seen since 1990. The decline in galleta(warm season grass) in the 6" frame size is not considered significant. In this frame size, frequency of galleta declined significantly in 1990 and has remained relatively stable since then. Scarlet gobemallow recovered in 2010 to average frequency. Low frequency of this long-lived perennial in 2003 may have been drought induced. The appearance of cheatgrass (not noted in the 2003 range health assessment or this frequency transect) is of concern, as is the appearance of more weedy species such as stickseed (60% freq) and hornhead (16% freq). The appearance of annual weeds is a concern and may indicate degrading site conditions. Overall trend is down.

Data analyzed at the 80% confidence level.

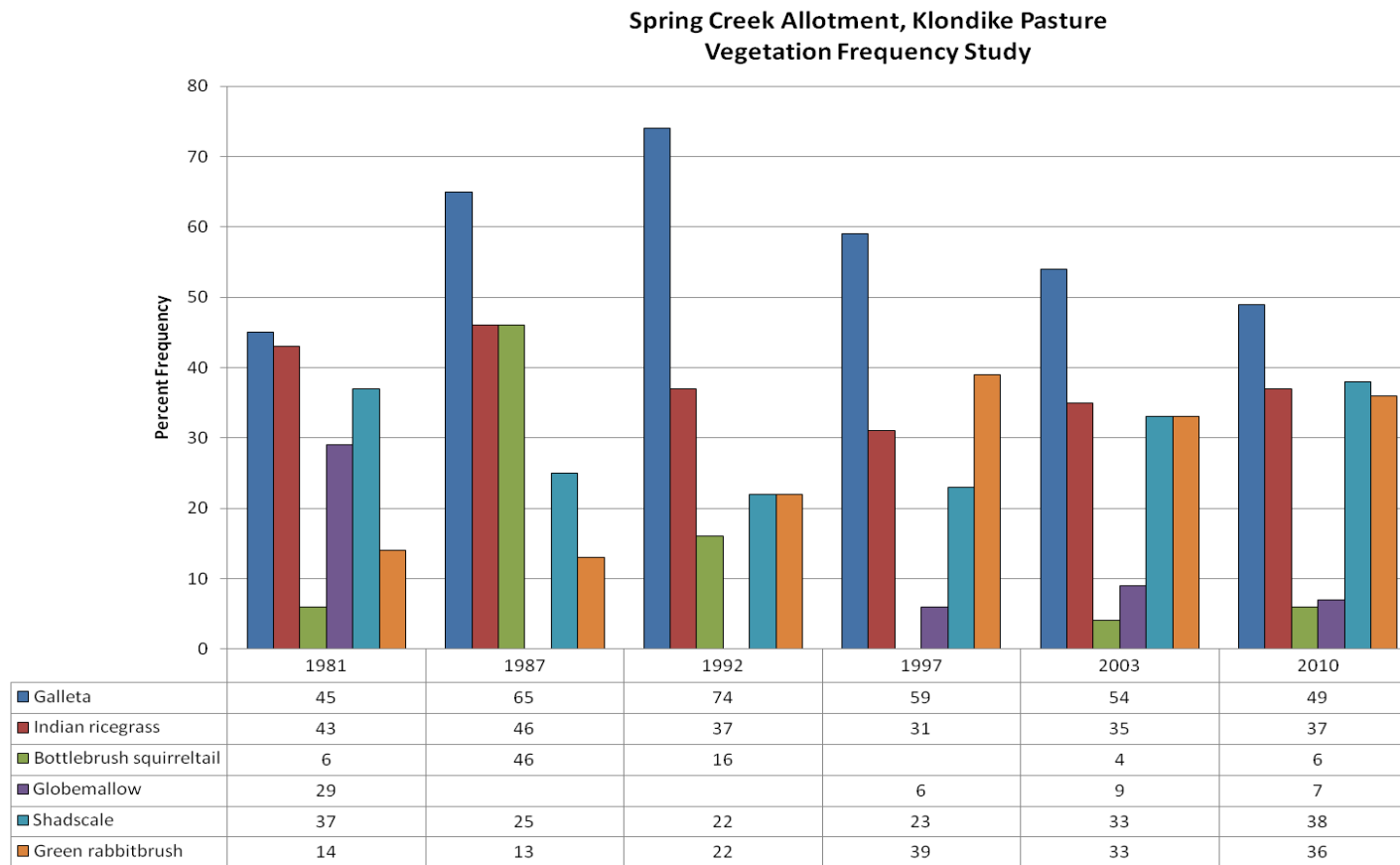
Note: A null value for a particular species indicates that its occurrence is unknown. a zero value indicates that the species was measured, but was absent on the trend plot.

Spring Creek Allotment, Klondike Pasture



There was no statistically significant change in groundcover percent frequencies from 2003 to 2010. Data collected in 1987 and 1997 looks similar to 2010. Yet, the frequency of basal vegetation remains low, falling well below its potential of 15%. In the short-term, conditions haven't worsened. The site is degraded, but trend is static.

Data analyzed at the 80% confidence level.

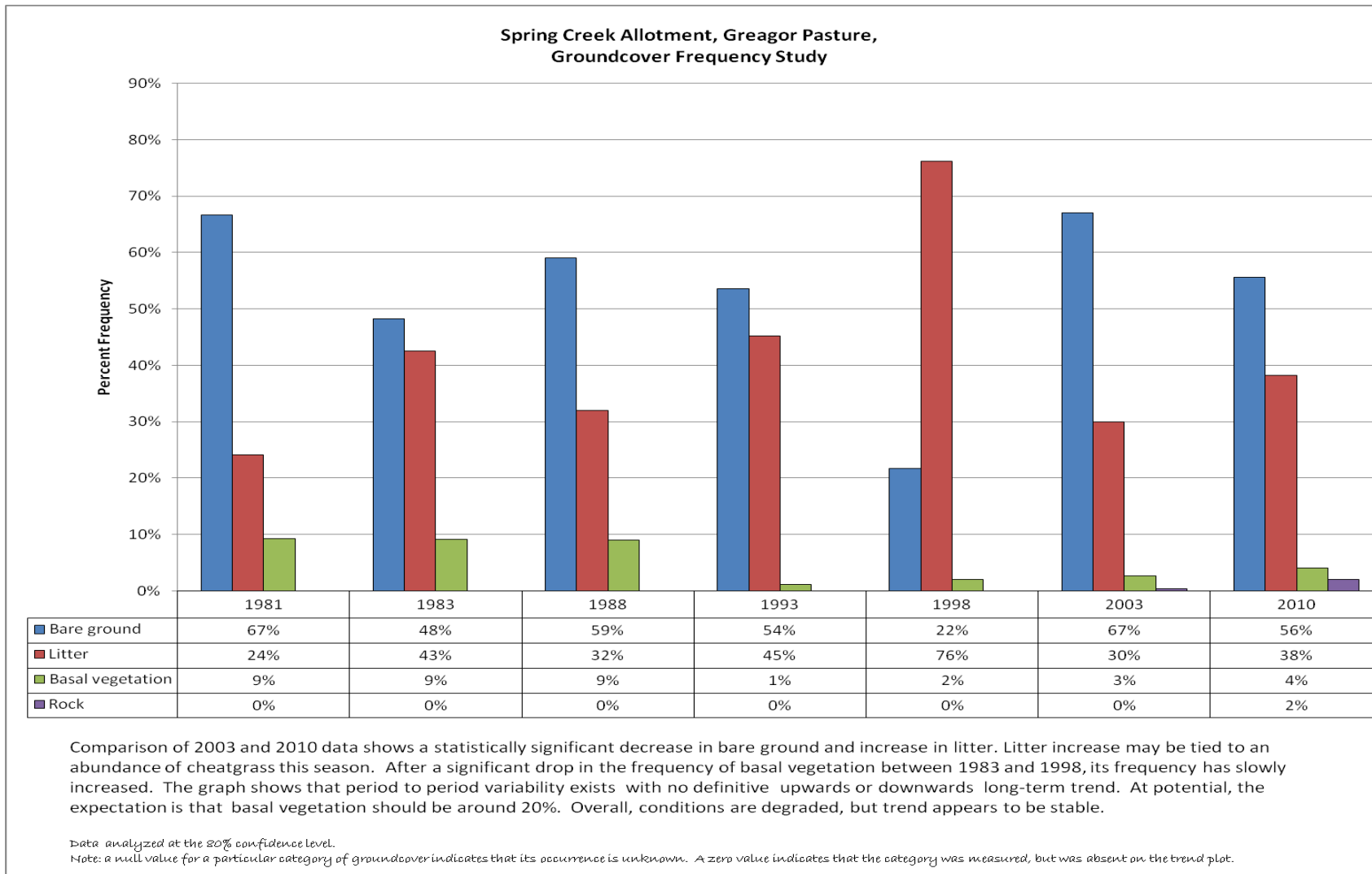


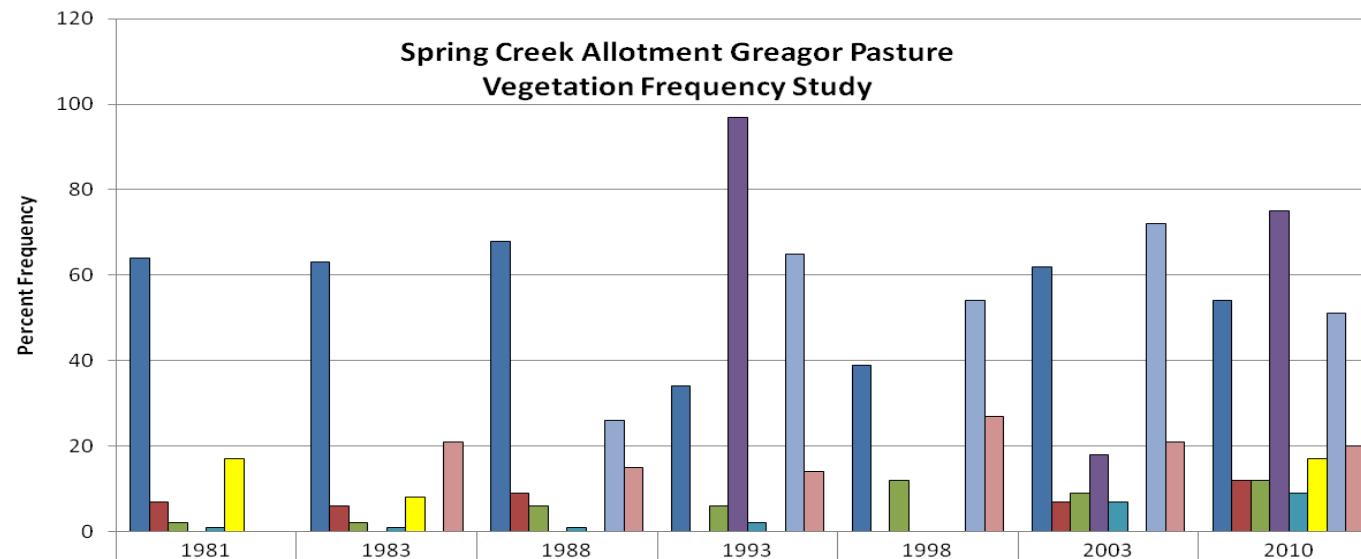
There was no statistically significant change in the frequency of species listed above from 2003 to 2010. Squirreltail increased slightly in 2010, but not significantly. Galleta continued to decline between 2003 and 2010, though not significantly. However, galleta, which peaked in '92 at 74% and squirreltail, which peaked in '87 at 46%, have declined significantly since. Other grass species expected on this site such as salina wildrye and western wheatgrass haven't been recorded since trend plots were first read in 1981. A comparison of the species richness of this site with its potential indicate that the site is degraded. However, although the frequency of remaining grass species has decreased over time, in the recent 5-yr period, trend remained stable on this site without further degradation.

Data analyzed at the 20% confidence level.

Note: A null value for a particular species indicates that its occurrence is unknown. A zero value indicates that the species was measured, but was absent on the trend plot.

Spring Creek Allotment, Greagor Pasture





Galleta 6"	64	63	68	34	39	62	54
Sand dropseed	7	6	9	0		7	12
Indian ricegrass	2	2	6	6	12	9	12
Cheatgrass				97		18	75
Bottlebrush squirreltail	1	1	1	2	0	7	9
Russian thistle 6"	17	8				0	17
Scarlet globemallow			26	65	54	72	51
Shadscale		21	15	14	27	21	20

No significant change occurred in desirable grass species from 2003 to 2010. Over the data period 1981 to 2010, galleta has seen a decline, though. The cool-season grasses, Indian ricegrass and squirreltail, have actually increased. Other desirable cool-season grasses such as salina wild-rye have been absent since 1981. Both cheatgrass and Russian thistle had significant presence in 2010, perhaps due to favorable winter/spring moisture conditions. The former may be a primary source for the increase in litter this year. Both species have been present on site since the '70's, but weren't always recorded on trend plots. Scarlet globemallow declined significantly since 2003, but over a longer term, it has remained stable. Shadscale is expected and has a stable population. Trend on this site is static.

Data analyzed at the 80% confidence level.

Note: a null value for a particular species indicates that its occurrence is unknown. a zero value indicates that the species was measured, but absent on the trend plot.

2003 Rangeland Health Assessment Attribute Ratings and Vegetation Condition Ratings

A rangeland health assessment was completed on the Spring Creek Allotment in 2003. This assessment evaluated ecological sites on the allotment comparing existing site conditions to those expected for the site at potential condition. Ecological sites are areas with uniform soils and topography that produce a distinct natural (reference) plant community. The Spring Creek allotment has the following ecological sites.

Table 7. Ecological sites in the Spring Creek Allotment.

Ecological Site	Dominant Vegetation type	Acres	% Of Allotment
Clayey salt desert	Saltbush/galleta	6,430	28%
Pinyon Juniper	Pinyon-juniper	4,722	20%
Basin Shale	Black sage/grass	2,208	10%
Silty salt desert	Shadscale/galleta	1,691	7%
Salt Flat	Big sage/greasewood/alkali sacaton	1,071	5%
Semidesert Loam	Big sage/galleta	165	1%
Other - badland, steep slopes, rock	Barren	6,742	29%
Total		23,029	100%

The rangeland health assessment evaluated eighteen site indicators with a qualitative, descriptive rating system, following BLM Technical Reference 1734-6, 2000, Interpreting Indicators of Rangeland Health. The indicators were used to evaluate three rangeland health attributes, soil and site stability, hydrologic function and biotic integrity. These attributes are used, in part, to help make a determination as to whether the allotment is meeting the rangeland health standards for public land health (H-4180-1 Rangeland Health Standards, 1/19/01). Overall the Spring Creek allotment had the following ratings applied:

Table 8. Rangeland Health Assessment – attribute ratings.

Percent of acres in each rating	Degree of Departure from Reference Site Condition				
Attribute	Extreme	Mod to Extreme	Moderate	Slight to Moderate	None to Slight
Soil and Site Stability	7%	34%	43%	14%	3%
Hydrologic Function	7%	47%	30%	13%	3%
Biotic Integrity	7%	52%	12%	27%	3%

The health attributes soil and site stability and hydrologic function dominantly reflect a moderate to extreme or extreme degree of departure from the ecological site descriptions, for up to 54% of the rated area within the allotment. These ratings indicate these sites are beyond “at risk”; meaning these rangelands may have an irreversible loss in productive capability and may have suffered irreversible degradation. Up to 43% rated a moderate degree of departure, an “at risk” category. “At risk” indicates that these rangelands have a reversible loss in productive capability and increased vulnerability to irreversible degradation (NRC, 1994). Only 17% of the acres rated in the slight to moderate or none to slight categories for degree of departure from the ecological site descriptions.

Range: Actual Use

Spring Creek Basin Grazing allotment actual use report for 2010 was 318 AUM's.

Permittee Billed use: 2009 billed use was 125 cows 12/1-2/28 (326 AUM's), 2008 billed use was 125 cows 12/2-2/27 (326 AUM's) and 2007 was also 125 cows 12/2-2/27 (326 AUM's). Actual use numbers were not collected from 2007-2009.

Special Status Species Lists for the BLM

Species Considered

Federally listed species for the San Juan National Forest and San Juan BLM Resource Area based on July 14th, 2010 list from the FWS and the quarterly updates received at the San Juan Public Lands Center.

Species	Status	Habitat Present In Project Area?	Species Affected?
Canada lynx	Threatened	N	N
New Mexico jumping mouse	Candidate	N	N
Gunnison sage grouse (BLM)	Candidate	N	N
Mexican spotted owl	Threatened	N	N
Southwestern willow flycatcher	Endangered	N	N
Yellow-billed cuckoo	Candidate	N	N
Bonytail	Endangered	N	N
Colorado pikeminnow	Endangered	N	N
Greenback cutthroat trout	Threatened	N	N
Humpback chub	Endangered	N	N
Razorback sucker	Endangered	N	N
Uncompahgre fritillary butterfly	Endangered	N	N

Colorado Bureau of Land Management sensitive fish, plant, and wildlife species based on Information Bulletin No. CO-2010-007 (December 2009) for the San Juan Public Lands.

Species	Habitat Present In Project Area?	Species Impacted?
Mammals		
Allen's big-eared bat	N	N
Big free-tailed bat	N	N
Fringed myotis	N	N
Spotted bat	N	N
Townsend's big-eared bat	N	N
Desert Bighorn Sheep	N	N
New Mexico Meadow Jumping Mouse	N	N
Gunnison's Prairie Dog	N	N
Birds		
American Bald Eagle	N	N
American peregrine Falcon	N	N
Ferruginous hawk	N	N

Species	Habitat Present In Project Area?	Species Impacted?
Western Burrowing Owl	Y	N
Western yellow-billed cuckoo	N	N
Colombian sharp-tailed grouse	N	N
Gunnison sage grouse	N	N
Northern goshawk	N	N
White-faced ibis	N	N
Fish, Herps and Amphibians		
Bluehead sucker	N	N
Colorado River cutthroat trout	N	N
Flannelmouth sucker	N	N
Roundtail chub	N	N
Desert spiny lizard	Y	N
Longnose leopard lizard	Y	N
Canyon treefrog	N	N
Northern leopard frog	N	N
Insects		
Great basin silverspot butterfly	N	N

Appendix G. Comments and Responses on Spring Creek Wild Horse Herd 2011 Gather EA

Reserved